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Vol. 979 Number 2

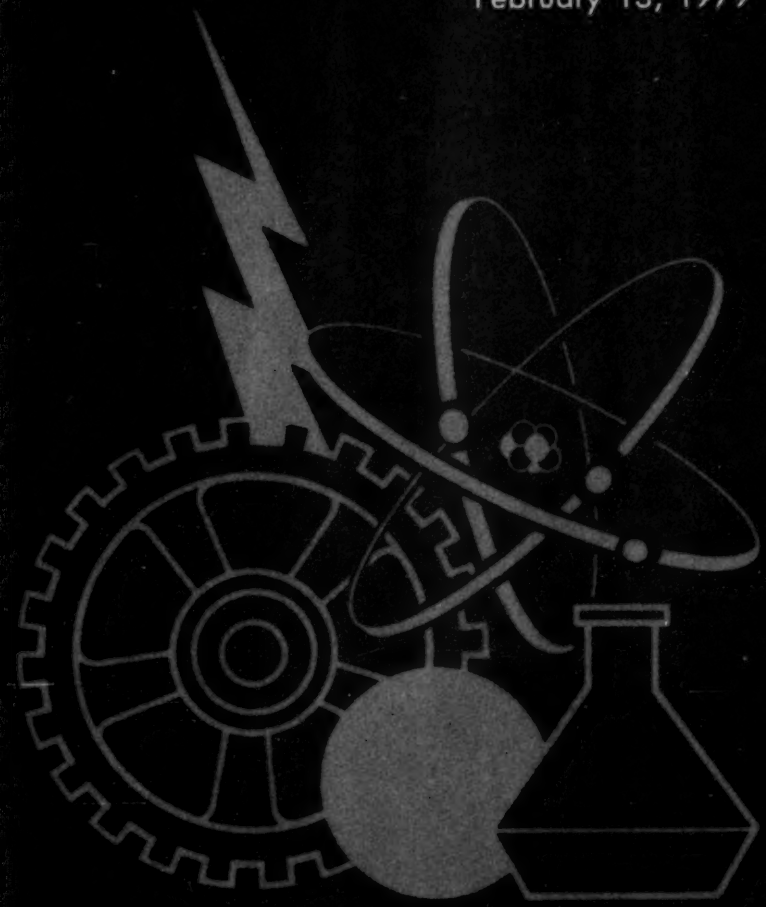
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 13, 1979



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

February 13, 1979 Volume 979 Number 2

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For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT): Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER.

Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

1,723,373, D. Roberts, COMBINATION HEATING AGENT CONTAINER AND WET COMPRESS-HOLDER; **2,154,184,** same, ELECTRIC HEATING MECHANISM; **Reg. No. 541,657** (BATTLE CREEK), Battle Creek Equipment Company; **Reg. No. 565,165** (THERMOPHORE), same, **filed** Jan. 30 1978, D.C., W.D. Mich. (Grand Rapids), Doc. K78-39-CA9, *Battle Creek Equipment Co.* v. *Roberts Mfg. Co. et al.*

2,154,184. (See 1,723,373.)

2,611,813, Sharpless and Eichert, Jr., MAGNETIC DATA STORAGE SYSTEM, **filed** Sept. 10, 1976, D.C. Md. (Baltimore), Doc. C17653-W, *Technitrol, Inc.* v. *Control Data Corporation.* Stipulation and order that case be dismissed, Nov. 9, 1978.

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE; **3,030,258,** same, DRY CEMENT COMPOSITION COMPRISING PORTLAND CEMENT, METHYL CELLULOSE, AND POLYVINYL ALCOHOL AND METHOD OF INSTALLING TILE WITH SAME, **filed** Nov. 22, 1978, D.C., W.D.N.C. (Charlotte), Doc. C-C-78-0353, *Tile Council of America, Inc.* v. *Superior Sales & Mfg. Co. et al.*

3,017,304, A. A. Urgeni, ABSORBENT FIBROUS STRUCTURE AND METHOD OF PRODUCTION; **3,612,055,** Mesek and Repke, DISPOSABLE DIAPER OR THE LIKE AND METHOD OF MANUFACTURE; **3,616,114,** Hamaguchi and Tanaka, REUSABLE COMPOSITE ADHESIVE SEALING TAPES; **3,938,522,** V. L. Repke, DISPOSABLE DIAPER, **filed** Sept. 21, 1977, D.C., E.D. Wis. (Milwaukee), Doc. 77-614, *Johnson & Johnson* v. *Kimberley-Clark Corporation.*

3,030,258. (See 2,934,932.)

3,228,007, G. Dirks, MAGNETIC STORAGE DEVICE; **3,641,528,** same, SIGNAL-STORING DEVICE WITH REMOVABLE SIGNAL-STORING UNIT; **3,657,712,** same, STORING DEVICE FOR SIGNALS, **filed** June 4 ,1976, D.C. Del. (Wilmington), Doc. 76-191, *Control Data et al.* v. *Hale Bros. Associates, Inc.* Plaintiff's notice of dismissal with prejudice, Feb. 8, 1978.

3,263,236, D. C. Humphrey, MOUNTING FOR FACE MASK; **Reg. No. 993,757** (FULL-CAGE), Schutt Manufacturing Co., **filed** May 4, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1739, *Schutt Mfg. Co.* v. *Riddel, Inc.*

3,292,117, Bryant and Johnston, COAXIAL CONNECTOR WITH MEANS FOR PREVENTING AXIAL AND ROTATIONAL MOVEMENT BETWEEN CONNECTOR COMPONENTS, **filed** Aug. 11, 1977, United States Court of Claims (Washington, D.C.), *Omni Spectra, Inc.* v. *The United States.* It is hereby stipulated by and between the parties hereto that the petition in the above-entitled action be and the same is hereby dismissed with prejudice, Dec. 4, 1978.

3,297,155, Gattenby and D'Amato, Golner, Feinstein, TUBULAR CORES, **filed** Nov. 6, 1978, D.C. Mass. (Boston), Doc. C.A. 78-2853-F, *Borden, Inc.* v. *Polyvinyl Films, Inc.*

3,306,465, F. P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS; **3,510,139,** same, WARDROBE HANGER BAR; **3,613,898,** F. P. Brennan, CAP LOCKING MEANS FOR WARDROBE HANGER BAR, **filed** July 25, 1977, D.C., S.D.N.Y., Doc. 77-C-3567, *Francis P. Brennan* v. *Mr. Hanger, Inc.*

3,325,860, G. Hansen, MOULDING AND SEALING MACHINES; **Re. 27,155,** same, **filed** Feb. 21, 1978, D.C. Mass. (Boston), Doc. C.A. 78-473-C, *Gerhard Hansen and Weiler Engineering, Inc.* v. *Albert J. Agbay, Sr. and Puritan Industries, Inc.*

3,337,681, D. J. Smith, SPLICE CASE; **3,602,926,** same, ALIGNABLE END SEALS FOR A SPLICE CASE, **filed** Nov. 7, 1978, D.C., W.D. Pa. (Pittsburgh), Doc. 78-1275, *Preformed Line Products Company* v. *Siemens A.G.*

3,391,399, R. A. Pendleton, MAGNETIC TAPE PNEUMATIC CAPOTAN DRIVE WITH MOVABLE PNEUMATIC BRAKE; **3,823,388,** Chadima, Jr. and Bruce, DATA COLLECTION AND UTILIZATION SYSTEM, **filed** Oct. 31, 1977, D.C., N.D. Ill. (Chicago), Doc., 77c4029, *Norand Corporation* v. *Telxon Corporation et al.*

3,438,031, G. H. Fathauer, DOPPLER RADAR HAVING DIGITAL SPEED INDICATOR; **3,689,921,** F. M. Berry, METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE SPEED OF A MOVING OBJECT; **3,936,824,** Aker, Geist, Kittle, and Berry, METHOD AND APPARATUS FOR DIGITAL MEASURING SPEED; **Re. 29,401,** Aker, Geist, Kittle, and Berry, METHOD AND APPARATUS FOR DIGITALLY MEASURING SPEED, **filed** July 21, 1978, D.C., W.D. Mo. (Kansas City), Doc. 78-0538-CV-W-4, *M.P.H. Industries, Inc.* v. *Kustom Electronics, Inc.*

3,515,619, S. R. Barnette, RESINOUS PLASTIC SHEETS, SHAPES, PANELS AND SLABS SIMULATING OBSIDIAN AND QUARTZ, **filed** Nov. 30, 1978, D.C., S.D. Tex. (Houston), Doc. CA H-78-2308, *Dimensional Plastics Corp.* v. *Frank Lazarus Caffgas.*

3,515,792, R. Deutsch, DIGITAL ORGAN; **3,610,799,** G. A. Watson, MULTIPLEXING SYSTEM FOR SELECTION OF NOTES AND VOICES IN AN ELECTRONIC MUSICAL INSTRUMENT; **3,610,805,** Watson and Deutsch, ATTACK AND DECAY SYSTEM FOR A DIGITAL ELECTRONIC ORGAN; **3,610,806,** R. Deutsch, ADAPTIVE SUSTAIN SYSTEM FOR DIGITAL ELECTRONIC ORGAN; **3,639,913,** G. A. Watson, METHOD AND APPARATUS FOR ADDRESSING A MEMORY AT SELECTIVELY CONTROLLED RATES; **3,743,755,** G. A. Watson, METHOD AND APPARATUS FOR ADDRESSING A MEMORY AT SELECTIVELY CONTROLLED RATES, **filed** June 2, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-2002-FW, *Nippon Gakki Seizo Kabushiki Kaisha* v. *Allen Organ Company.* Filed stipulation and order thereon dismissing action with prejudice Dec. 22, 1977. **Same, filed** June 7, 1977, D.C. Pa. (Philadelphia), Doc. 77-1994, *Allen Organ Company* v. *Nippon Gakki Seizo Kabushiki Kaisha.*

3,519,139. (See 3,306,465.)

3,538,484, A. P. Fassaflume, CONDUCTOR AND KEEPER MEANS; **D. 217,398,** W. P. Barbour, IMPRINTER, **filed** Oct. 21, 1971, D.C. Del. (Wilmington), Doc. 4255, *Marsland Engineering Limited et al.* v. *Control Data Corporation.* Final consent decree, July 29, 1977.

3,548,116, H. W. Schafft, ACOUSTIC TRANSDUCER INCLUDING PIEZAELECTRIC WAFER SOLELY SUPPORTED BY A DIAPHRAGM; **3,852,529,** same, ACOUSTIC HORN, **filed** Oct. 27, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-4134, *Motorola, Inc.* v. *Apollo Speaker Inc.*

3,572,117, A. E. Rodely, BLUFF BODY FLOWMETER, **filed** Mar. 24, 1977, D.C.N.J. (Trenton), Doc. C-77-0589, *The Foxboro Company* v. *Estech, Inc.* Order administratively terminating action as action staved pending determination by U.S. Patent and Trademark Office on defendant's application to reissue certain patent, Mar. 28, 1977.

3,572,327, Beard and Boggs, Treace, UNIVERSAL TRACTION BELT MEANS, **filed** Oct. 16, 1972, D.C., N.D. Ind. (South Bend), Doc. 72-S-206, *Richards Manufacturing Company, Inc.* v. *Orthopedic Equipment Company, Inc.* Claims of plaintiff's patent are invalid. Defendant's patent does not infringe claims of plaintiff's patent. Entered June 9, 1978.

3,594,751, Ogden and Henderson, DETECTION OF PRODUCTS OF COMBUSTION, **filed** Apr. 6, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1293, *Pittway Corporation et al.* v. *The BRK Shareholders' Committee et al.*

3,610,799. (See 3,515,792.)

3,610,805. (See 3,515,792.)

3,610,806. (See 3,515,792.)

3,612,055. (See 3,017,304.)

3,613,353, B. A. Kock, WATCH; **3,685,282,** same, WATCH ESCAPEMENT MECHANISM, **filed** June 8, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-1254-SAW, *Bruce A. Kock* v. *Quaker Oats Co.*

3,613,898. (See 3,306,465.)

3,616,114. (See 3,017,304.)

3,617,613, Benzinger and Kroth, PUNCHABLE PRINTED CIRCUIT BOARD BASE, **filed** Dec. 7, 1978, D.C.N.H. (Concord), Doc. C78-434, *Spaulding Fibre Company* v. *Oak Materials Group, Inc.*

3,629,460, V. Dittrich, METHOD OF COMBATING COTTON PESTS, **filed** July 7, 1978, D.C., N.D. Miss. (Clarksdale), Doc. DC 78-81-K-P, *Ciba-Geigy, Limited and Ciba-Geigy Corporation* v. *Tenatek, Inc.* **Same, filed** July 10, 1978, D.C., S.D. Miss. (Jackson), Doc. W78-0037(R), *Ciba-Geigy Limited and Ciba-Geigy Corp.* v. *Paul Hanshaw Chemical Co., Inc.* Order of dismissal without prejudice, July 11, 1978.

3,637,111, M. L. McCreary, HEATING SYSTEM, **filed** June 26, 1978, D.C., S.D. Ohio (Cincinnati), Doc. C-1-78-4041, *Inmont Corporation* v. *Fluid Kinetics, Inc.*

3,639,913. (See 3,515,792.)

3,641,528. (See 3,228,007.)

3,643,105, Bantz, Faile and Peschel, MODULAR CASCADED REVERSIBLE POLARITY ULTRA-HIGH D.C. VOLTAGE SUPPLY SYSTEM; **3,781,639,** S. G. Peschel, HIGH VOLTAGE ACCELERATOR POWER SUPPLY, **filed** Mar. 30, 1978, D.C., S.D.N.Y., Doc. 78-C-1445 (HFW), *Hipotronics, Inc.* v. *Universal Voltronics Corp.*

3,644,764, H. R. Newell, HARMONIC DRIVE FOR DIGITAL STEP MOTOR, **filed** June 16, 1978, D.C., M.D. Pa. (Scranton), Doc. C78-573, *Mesur-Matic Electronics Corp.* v. *Mergenthaler Linotype Company Inc.*

3,649,853, C. F. Kerchner, Jr., ELECTRIC HEAT CONTROL SYSTEM, **filed** Nov. 16, 1976, D.C. Minn. (Minneapolis), Doc. 4-76-C-498, *Kalglo Electronics Co., Inc.* v. *Electro Industries, Inc.*

3,650,460, B. P. Lokey, PAPER BAG; **3,687,356,** Goodrich and Waxlax, GUSSETED TYPE BAGS, **filed** May 29, 1973, D.C., S.D. Iowa (Des Moines), Doc. 73-117-2, *Great Plains Bag Corp.* v. *St. Regis Paper Company.* Dismissed Jan. 19, 1978.

3,657,712. (See 3,228,007.)

3,658,459, J. A. Gartlan, ABSORBENT FOR PURIFYING DRY-CLEANING SOLVENTS, **filed** July 14, 1978, D.C., E.D. Mo. (St. Louis), Doc. 78-0589C(2), *Kleen-Rite Inc.* v. *Pursol Chemical Corp. et al.*

3,659,284, W. T. Rusch, TELEVISION GAMING APPARATUS; **3,659,285,** Baer and Rusch and Harrison, TELEVISION GAMING APPARATUS AND METHOD; **3,728,480,** R. H. Baer, TELEVISION GAMING AND TRAINING APPARATUS; **Re. 28,507,** W. T. Rusch, TELEVISION GAMING APPARATUS; **Re. 28,598,** Baer, Rusch, and Harrison, TELEVISION GAMING APPARATUS AND METHOD, **filed** Dec. 13, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4951, *The Magnavox Company* v. *Bally Manufacturing Corporation et al.* **Same, filed** Dec. 9, 1976, D.C., S.D. Fla. (Fort Lauderdale), Doc. 76-2221-C NCR, *The Magnavox Company* v. *Allied Leisure Industries.*

3,659,285. (See 3,659,284.)

3,665,194, Alter and Price, RADON DETECTION, **filed** July 22, 1977, D.C., E.D. Tex. (Sherman), Doc. S-77-76-CA, *Terradex Corporation* v. *John Sandy and Sherry Sandy.*

3,671,934, R. M. Teich, AUTOMOBILE THEFT ALARM FOR DETECTING UNAUTHORIZED ENERGIZATION OF RESISTIVE LOAD, **filed** Aug. 5, 1977, D.C., S.D.N.Y., Doc. 77-C-3844 (WK), *General Automotive Specialty Co., Inc.* v. *Monroe Timer Co., Inc.*

3,675,247, J. O. Ferrell, METHOD FOR FABRICATING PANTY HOSE; **Re. 25,360,** E. G. Rice, COMBINATION STOCKING AND PANTY, **filed** Oct. 5, 1976, D.C. M.D.N.C. (Greensboro), Doc. C-76-525-S, *Tights Inc.* v. *Liberty Hosiery Mills, Inc.* Voluntary dismissal without prejudice, entered Apr. 21, 1978.

3,677,747, Lund, Hockin and Woulds, HIGH TEMPERATURE CASTABLE ALLOYS AND CASTINGS; **3,720,500,** Danes and Thielemann, NICKEL BASE ALLOY, **filed** May 5, 1978, D.C. Del. (Wilmington), Doc. 78-174, *Martin Marietta Corporation* v. *Howmet Corporation.*

3,682,076, I. Erlichman, SUPPORT MEMBER FOR PREVENTING INVERTED INSERTION OF A FILM CASSETTE; **3,705,537,** R. Paglia, APPARATUS FOR INTERFACING PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE; **3,709,122,** Blinow and Leduc, FILM ADVANCING APPARATUS; **3,766,842,** J. M. Whall, PHOTOGRAPHIC FILM PROCESSING APPARATUS; **3,776,118,** Driscoll and Whall, PHOTOGRAPHIC FILM PROCESSING APPARATUS; **3,779,144,** R. Paglia, PHOTOGRAPHIC FILM PROCESSING APPARATUS AND CAMERA SYSTEM EMPLOYING SAME; **3,810,220,** R. Paglia, DETACHABLE SPREAD ROLLER HOUSING SECTION; **3,810,211,** Wareham and Paglia, SELF DEVELOPING CAMERA SYSTEM; **3,854,800,** J. J. Driscoll, PHOTOGRAPHIC APPARATUS; **Re. 28,054,** A. J. Bachelder, PHOTOGRAPHIC APPARATUS AND METHOD, **filed** July 3, 1975, D.C. Del. (Wilmington), Doc. 75-179, *Polaroid Corporation* v. *Berkey Photo, Inc.* Consent judgment, Apr. 5, 1978.

3,685,282. (See 3,613,353.)

3,689,921. (See 3,438,031.)

3,692,926. (See 3,337,681.)

3,696,744, G. Etchell, SADDLE LOCKUP FOR FLEXIBLE PRINTING PLATE, **filed** June 1, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-2121-AAH (SX), *Beach Manufacturing Company* v. *Rockwell International Corporation.*

3,697,356. (See 3,650,460.)

3,699,967, R. K. Anderson, ELECTROSURGICAL GENERATOR; **3,801,800,** D. W. Newton, ISOLATING SWITCHING CIRCUIT FOR AN ELECTROSURGICAL GENERATOR, **filed** July 13, 1977. D.C. Colo. (Denver), Doc. 77-F-655, *Valleylab, Inc.* v. *Neomed, Inc.*

3,705,537. (See 3,682,076.)

3,709,122. (See 3,682,076.)

3,711,871, M. H. Sherin, SANITARY LIQUID SPECIMEN COLLECTOR; **D. 227,413,** same, FUNNEL FOR A SANITARY SPECIMEN COLLECTOR, **filed** April 21, 1978, D.C. N.D. Ill. (Chicago), Doc. 78c15549, *Sage Products, Inc.* v. *Premium Plastics Inc.* Status hearing held, cause dismissed without prejudice-by atipulation, Dec. 8, 1978.

3,713,258, E. Svensson, BUILDING STRUCTURE, **filed** Dec. 14, 1978, D.C. W.D. Wash. (Seattle), Doc. C78-770V, *Haida Hide, Inc. and Einar Svensson* v. *James T. Barschaw.*

3,720,500. (See 3,677,747.)

3,728,480. (See 3,659,284.)

3,731,055. (See 3,649,853.)

3,743,755. (See 3,515,792.)

3,752,110, R. A. Rhoda, AFTERPLANE FOR MARINE JET-POWERED BOATS; **3,840,319,** same, MOLD INSERT, **filed** Dec. 11, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-4693-F, *Berkeley Pump Company* v. *Maritec Corporation.*

3,756,480, Swett and Croyle, THREE-PART PRESS TYPE; SEAL; **D. 226,576,** same, CONTAINER CLOSURE OR THE LIKE; **D. 227,142,** Swett and Bateman, PITCHER OR THE LIKE, **filed** July 28, 1978, D.C. E.D.N.Y. (Brooklyn), Doc. 78-C-1632, *Dart Industries, Inc.* v. *Joy Plastics, Inc.*

3,766,842. (See 3,682,076.)

3,770,550, M. D. Levitan, PACKET-TYPE LAMINATING MACHINE, **filed** Dec. 31, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3792, *Thermal Laminating Corporation* v. *Laminex, Inc.* Case and cause dismissed without prejudice, July 14, 1975.

3,776,118. (See 3,682,076.)

3,779,144. (See 3,682,076.)

3,781,639. (See 3,643,105.)

3,783,100, Larson and Turner, NON-RETROGRADED THINNED HYDROLYZATES, **filed** November 3, 1978, D.C. Del. (Wilmington), Doc. 78-469, *A. E. Staley Manufacturing Company* v. *The Hubinger Company.*

3,789,442, S. Tobinick, LIGHT-WEIGHT MINIMUM VOLUME WATER PAD WITH INTEGRAL WATER CONTAINER SECUREMENT MEANS, **filed** June 9, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-1265-SAW, *National Mattress Co.* v. *Intimate Sleep Products, Inc. et al.*

3,801,800. (See 3,699,967.)

3,810,211. (See 3,682,076.)

3,810,220. (See 3,682,076.)

3,823,388. (See 3,391,399.)

3,830,373, M. E. Sixt, CORRUGATED DRAINAGE TUBE WITH RESTRAINING SCREEN, **filed** Aug. 23, 1978, D.C., N.D. Ohio (Toledo), Doc. C78-386, *Advanced Drainage Systems, Inc.* v. *Hancor, Inc.*

3,831,172, Olliges, Polanek, SOLID-STATE SOUND EFFECT GENERATING SYSTEM, **filed** Nov. 19, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3352, *Universal Research Laboratories, Inc.* v. *Chicago Coin Machine Company.* By consent order plaintiff owner of certain patent; defendant restrained, Apr. 25, 1975.

3,831,502, M. Tokuno, STILLER SCORER APPARATUS, **filed** Aug. 18. 1978, D.C.N.J. (Newark), Doc. 78-2000, *Rengo Co., Ltd. and Simon Container Machinery Limited* v. *Molins Machine Company, Inc.*

3,832,952, H. Hurni, DEVICE FOR THE VERTICAL AND LATERAL DISPLACEMENT OF RAILWAY TRACK, **filed** May 2, 1977, D.C., E.D. (Norfolk), Doc. C/A 77-294-N, *Canron, Inc.* v. *Plasser American Corporation.* It is ordered and adjudged that the plaintiff take nothing, that the action be dismissed on the merits, June 16, 1978.

3,835,543, N. G. Poyidoris, MEASURING INSTRUMENT, *filed* Nov. 7, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-4274, *ENM Company* v. *Bibi Products Co., Inc.*

3,840,319. (See 3,752,110.)

3,852,529. (See 3,548,116.)

3,854,809. (See 3,682,076.)

3,873,130, W. P. Whitley, Jr., GUIDE AND SUPPORT MECHANISM FOR BOAT TRAILERS; **3,885,146,** same, DETACHABLE TAIL LIGHT ASSEMBLY FOR BOAT TRAILERS; **Reg. No. 885,333** (FLOAT-ON), Southeastern Fabricators, Inc., **filed** Dec. 12, 1975, D.C., S.D. Fla. (Miami), Doc. 75-2934-C-Je, *William P. Whitley, Jr. and Southeastern Fabricators, Inc.* v. *Road Corporation, doing business as Hitchhiker Trailers.* Ordered and adjudged that plaintiffs take nothing, action dismissed on merits and relief sought by counterclaim denied, filed Aug. 17, 1977.

3,887,268, Golden and Kennedy, FLASHING REFLECTOR SYSTEM, **filed** Oct. 28, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3622, *Beatrice Foods Co.* v. *Sate-Lite Mfg. Co.* Defendant's motion for summary judgment is granted, May 31, 1978.

3,887,903, C. R. Martell, INTERACTIVE MAN-MACHINE METHOD AND SYSTEM FOR GRADING PATTERN PIECES AND FOR PRODUCING AN APPAREL MARKER, **filed** Mar. 9, 1976, D.C., W.D. Tex. (San Antonio), Doc. SA-76-CA-72, *Cameo, Inc.* v. *Hughes Aircraft Company and Santone Industries Inc.*

3,899,719, J. V. Murphy, INTEGRATED CIRCUIT PANEL AND DUAL IN-LINE PACKAGE FOR USE THEREWITH, **filed** June 7, 1978, D.C.N.J. (Trenton), Doc. C78-1218, *Electronic Molding Corporation* v. *Garry Manufacturing Co.* Action settled by parties, Nov. 30, 1978.

3,921,358, P. S. Bettoli, COMPOSITE SHINGLE, **filed** Nov. 29, 1978, D.C., W.D. Okla. (Oklahoma City), Doc. C78-1283-P, *GAF Corporation* v. *Allied Materials Corporation and Allied Stroud Corporation.*

3,936,824. (See 3,438,031.)

3,938,522. (See 3,017,304.)

3,946,451, D. C. Spann, LIMB SUPPORT, **filed** Dec. 7, 1978, D.C., N.D. Ga. (Atlanta), Doc. C78-2091A, *Span-America, Inc. and Donald C. Spann* v. *Charles W. Knighton et al.*

3,954,265, D. L. Taylor, BALANCED GOLF CLUB, **Reg. No. 1,002,903** (ZEBRA), David L. Taylor, doing busines as Taylor Craft, **filed** Apr. 29, 1977, D.C., E.D. La. (New Orleans), Doc. 77-1347, *Taylorcraft, Inc.* v. *F. W. Woolworth Co.*

3,995,843, F. J. Kasteler, APPARATUS FOR SUPPORTING A WINDOW BUCK FRAME, **filed** Apr. 11, 1978, D.C. Utah (Salt Lake City), Doc. C-78-0124, *Fred J. Kasteler* v. *American Construction Supply Co.*

4,003,798, J. W. McCord,VAPOR GENERATING AND RECOVERING APPARATUS; **4,055,196,** T. J. Kearney, IMMERSION TYPE METAL DEGREASER WITH COMPRESSION-EXPANSION SYSTEM FOR HEATING AND COOLING OF LIQUID SOLVENT AND SOLVENT VAPORS, **filed** Nov. 14, 1978, D.C., E.D. Mich. (Detroit), Doc. 78-72918, *Detrex Chemical Industries, Inc.* v. *Corpane Industries, Inc. and James W. McCord.*

4,007,835, W. M. Klothe, FUSE AND FOLD FABRIC. **Reg No. 934,522** (TRI-DIMENSIONAL), Pellon Corporation **filed** Sept. 21, 1977, D.C., S.D.N.Y., Doc. 77-C-4644 (MEL), *Pellon Corp.* v. *Shire National Corp.*

4,013,083, E. Helbling, HAIR DRYER, **filed** Nov. 17, 1978, D.C.N.J. (Trenton), Doc. C78-2800, *Edward Hebling* v. *Conair Corp.*

4,032,009, R. E. Taylor, CONTAINER SYSTEM FOR GARAGE DOOR OPENER, **filed** July 29, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2756, *Robert E. Taylor and Aaron M. Schmidt* v. *Sears Roebuck & Co. and Chamberlain Manufacturing.* On stipulation, cause dismissed and counterclaim with prejudice, Nov. 20, 1978.

4,033,031, G. L. Ballew, METHOD AND MACHINE FOR INSERTING ELECTRICAL CONTACTS INTO ELECTRICAL INTERCONNECTION BOARDS; **4,043,033,** H. G. Yeo, MACHINE FOR INSERTING ELECTRICAL CONTACTS INTO ELECTRICAL INTERCONNECTION BOARD, **filed** Nov. 21, 1978, D.C. Mass. (Boston), Doc. CA 78-3054-C, *Augat, Inc.* v. *Altron Inc.*

4,043,033. (See 4,033,031.)

4,055,196. (See 4,003,798.)

4,086,724, R. E. McCaslin, MOTORIZED TOY VEHICLE HAVING IMPROVED CONTROL MEANS, **filed** Dec. 5, 1978, D.C., S.D.N.Y., Doc. 78-C-5849, *Frank Wittenberg* v. *Shadeed, Ramesey et al.*

4,100,714, M. R. Stith, Jr., METHOD OF POSITIONING AND SUPPORTING A MACHINE, **filed** Dec. 7, 1978, D.C., E.D. Tex. (Tyler), Doc. TY-78-323-CA, *Morris Randall Stith, Jr.* v. *Gas Engine Compressor Service Inc. and Carl Baker.*

4,118,084, H. Sussman, STACKABLE COMPARTMENTALIZED STRUCTURE FOR COSMETICS OR THE LIKE, **filed** Nov. 21, 1978, D.C., E.D.N.Y. (Brooklyn), Doc. 78-C-2560, *F. F. Adams, Inc.* v. *Pat Harris, Inc.*

Re. 25,360. (See 3,675,247.)

Re. 27,155. (See 3,325,860.)

Re. 28,054. (See 3,682,076.)

Re. 28,507. (See 3,659,284.)

Re. 28,508. (See 3,659,284.)

Re. 29,273, M. G. Reiffin, DIRECT-CURRENT-COUPLED TRANSITOR POWER AMPLIFIERS, **filed** July 21, 1978, D.C., W.D. Mich. (Grand Rapids), Doc. K78-534 CA-8, *Martin G. Reiffin* v. *Schlumberger Limited.*

Re. 29,401. (See 3,438,031.)

D. 217,765, J. T. Peterson, SOFT BODIED JIG; **D. 234,297,** same, SOFT LURE BODY, **filed** Aug. 25, 1977, D. C., Minn. (Minneapolis), Doc. 4-77-C-305, *Daniel D. Gapen et al.* v. *James T. Peterson.*

D. 226,576. (See 3,756,480.)

D. 227,142. (See 3,756,480.)

D. 227,413. (See 3,711,871.)

D. 228,239, G. Bryce, WRITING IMPLEMENT HOLDER FOR A TELEPHONE, **filed** May 6, 1976, D.C., E.D. Mich. (Detroit), Doc. 76-70927, *George Bryce* v. *Nu-Industrial Corp. et al.*

D. 229,532, Colato and Daly, MICROWAVE OVEN BROILER RACK, **filed** Dec. 15, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C-556, *Litton Systems, Inc.* v. *Anchor Hocking Corporation.*

D. 230,658, W. R. Powell, MATERIAL HANDLING BOX; **D. 233,181,** same, STACKABLE MATERIAL HANDLING BOX, **filed** Oct. 20, 1977, D.C., E.D. Wis. (Milwaukee), Doc. 77-682, *Powell Pressed Steel Company* v. *Triple E. Corporation.* Action dismissed, Aug. 10, 1978.

D. 233,181. (See 230,658.)

D. 234,297. (Seee 217,765).

D. 235,779, K. Barr, PHASING SIMULATE FOR MUSICAL INSTRUMENT, **filed** Nov. 27, 1978, D.C. Utah (Salt Lake City), Doc. C-78-0451, *MXR Innovations, Inc.* v. *John Johnson and David Difrancesco, doing business as DOD Electronics Co.*

D. 239,990. H. Oiko, ARM CHAIR, **filed** Aug. 28, 1978, D.C., S.D.N.Y., Doc. 78-C-4013, *Henry Oiko and Willow & Reed Inc.* v. *Federated Dept. Stores, Inc.*

D. 245,769, M. Chihara, MAGNETIC MEDICAL NECKLACE, **filed** Mar. 22, 1978, D.C., S.D. N.Y., Doc. 78–C–1294 WCC, *Tokyo Denki Kagaku Kogyo Kabushiki Kaisha* v. *National Pioneering Corp.*

P.P. 2539, F. W. Anderson, PLUM TREE, **filed** Aug. 31, 1978, D.C., E.D. Calif. (Fresno), Doc. F–78–178–C, *Reedley Nursery, Inc.* v. *George McIntyre.* Case voluntarily dismissed 1978, D.C., E.D. Calif. (Fresno), Doc. F–78–179–C, *Reedley* by plaintiff with prejudice, Nov. 6, 1978. **Same, filed** Aug. 31, *Nursery, Inc.* v. *John Paboojian, Jr.* **Same, filed** Aug. 31, 1978, D.C., E.D. Calif. (Fresno), Doc. F–78–180–C, *Reedley Nursery, Inc.* v. *Robert M. Shaw et al.* **Same, filed** Aug. 31, 1978, D.C., E.D. Calif. (Fresno), Doc. F–78–181–C, *Reedley Nursery, Inc.* v. *Frederick M. Richardson.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,324,553, Re. S.N. 959,435, Filed Nov. 9, 1978, Cl. 32/27, DENTAL HANDPIECE, John V. Borden, Owner of Record: *Inventor,* Attorney or Agent: C. Hercus Just, et al., Ex. Gp.: 333

3,795,186, Re. S.N. 952,002, Filed Oct. 16, 1978, Cl. 101/93.14, HIGH SPEED PRINTER, Robert H. Curtiss, et al., Owner of Record: *Iomec, Inc., Santa Clara, Calif.,* Attorney or Agent: Daniel M. Rosen, Ex. Gp.: 337

3,832,837, Re. S.N. 964,504, Filed Nov. 29, 1978, Cl. 56/218, WINDROWER HAVING REAR MOUNTED OVERTOP SWINGABLE TONGUE, Merle K. Burkhart, et al., Owner of Record: *Hesston Corporation, Hesston, Kans.,* Attorney or Agent: Gordon D. Schmidt, et al., Ex. Gp.: 333

3,970,197, Re. S.N. 926,236, Filed Jul. 20, 1978, Cl. 211/5, RACK AND BICYCLE LOCKING UNIT, Robert William Bale, Jr., Owner of Record: *Inventor,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 355

3,992,670, Re. S.N. 958,943, Filed Nov. 8, 1978, Cl. 325/134, FREQUENCY CONTROL CIRCUITS SUCH AS FOR USE IN MODULATION MEASUREMENT, Derek R. Gittins, et al., Owner of Record: *C. of N. Racal-Dana Instruments Limited, Berkshire, England,* Attorney or Agent: Franklin Crouch, et al., Ex. Gp.: 233

3,995,612, Re. S.N. 966,475, Filed Dec. 4, 1978, Cl. 126/139, CORNER ASSEMBLY FOR FIREPLACE ENCLOSURE, Robert C. Dew, Owner of Record: *Inventor,* Attorney or Agent: Maurice L. Miller, Jr., Ex. Gp.: 345

3,996,079, Re. S.N. 963,937, Filed Nov. 21, 1978, Cl. 149/35, METAL/OXIDE AZIDE GAS GENERATING COMPOSITIONS, Mario Angelo Divalentin, Owner of Record: *Canadian Industries Limited, Montreal, Quebec, Canada,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 223

3,996,952, Re. S.N. 959,437, Filed Nov. 9, 1978, Cl. 137/77, CONTROL DAMPER, James R. Root, Owner of Record: *Ruskin Manufacturing Company, Grandview, Mo.,* Attorney or Agent: Claude A. Fishburn, et al., Ex. Gp.: 341

4,005,732, Re. S.N. 964,943, Filed Nov. 30, 1978, Cl. 137/512.1, FLAPPER VALVE WITH INDEPENDENT SPRING ACTION, Spencer P. Buckner, Owner of Record: *TRW Inc., Cleveland, Ohio,* Attorney or Agent: Daniel G. Blackhurst, Ex. Gp.: 341

4,030,435, Re. S.N. 963,466, Filed Nov. 24, 1978, Cl. 114/36, HOPPER VALVE MODULE FOR HOPPER DREDGE, Ezra Sensibar, Owner of Record: *Construction Aggregates Corporation, Chicago, Ill.,* Attorney or Agent: David A. Vogel, et al., Ex. Gp.: 315

4,052,877, Re. S.N. 963,438, Filed Nov. 24, 1978, Cl. 72/253 A, EXTRUSION PRESS FOR INDIRECT EXTRUSION, Franz Josef Zilges, et al., Owner of Record: *Inventor,* Attorney or Agent: John Clark Holman, et al., Ex. Gp.: 321

4,055,907, Re. S.N. 963,836, Filed Nov. 27, 1978, Cl. 35/9 R, CHARACTER SCANNED TEACHING MACHINE, Eugene Murl Henson, Owner of Record: *Eric F. Burtis, Menlo Park, Calif.,* Attorney or Agent: Francis A. Utecht, et al., Ex. Gp.: 334

4,057,975, Re. S.N. 960,996, Filed Nov. 15, 1978, Cl. 62/324, HEAT PUMP SYSTEM, James J. Del Toro, et al., Owner of Record: *Carrier Corporation, Syracuse, N.Y.,* Attorney or Agent: J. Raymond Curtin, et al., Ex. Gp.: 344

4,057,975, Re. S.N. 960,997, Filed Nov. 15, 1978, Cl. 62/324, HEAT PUMP SYSTEM, Rudy C. Bussjager, Owner of Record: *Carrier Corporation, Syracuse, N.Y.,* Attorney or Agent: J. Raymond Curtin, et al., Ex. Gp.: 344

4,086,702, Re. S.N. 967,723, Filed Dec. 8, 1978, Cl. 321/14 A, MULTI-STRANDED COILED ORTHODONTIC ARCH WIRE, Melvin Wallshein, Owner of Record: *Inventor,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 333

PATENT NOTICES

Certificates of Correction for the Week of Feb. 13, 1979

Re. 29,694	4,090,059	4,101,281	4,109,840
Re. 29,704	4,091,799	4,101,316	4,109,976
D. 248,022	4,091,924	4,101,493	4,110,011
D. 248,107	4,092,150	4,102,295	4,111,855
D. 248,668	4,092,716	4,102,412	4,112,560
3,723,250	4,092,862	4,102,686	4,113,516
3,746,339	4,093,449	4,102,933	4,113,962
3,865,197	4,093,539	4,103,270	4,115,055
3,890,371	4,093,779	4,103,512	4,115,576
3,989,003	4,093,849	4,103,636	4,115,651
4,019,140	4,094,055	4,104,043	4,116,633
4,019,342	4,094,455	4,104,158	4,116,759
4,036,053	4,095,180	4,104,190	4,116,951
4,043,980	4,095,903	4,104,233	4,117,445
4,054,060	4,096,253	4,104,421	4,117,708
4,055,851	4,096,684	4,104,501	4,117,888
4,059,688	4,096,981	4,104,731	4,118,218
4,064,354	4,097,366	4,105,523	4,118,310
4,065,661	4,097,372	4,105,756	4,118,431
4,072,386	4,097,614	4,105,757	4,118,566
4,073,854	4,098,120	4,105,911	4,118,819
4,075,016	4,098,222	4,105,930	4,119,383
4,077,133	4,098,296	4,106,059	4,119,666
4,078,333	4,098,337	4,106,108	4,120,677
4,078,388	4,098,489	4,106,158	4,120,810
4,080,699	4,098,588	4,106,257	4,121,088
4,081,454	4,098,602	4,106,532	4,121,662
4,082,243	4,098,672	4,106,619	4,122,504
4,083,193	4,098,753	4,107,211	4,123,792
4,084,467	4,099,181	4,107,213	4,124,423
4,084,971	4,099,296	4,107,604	4,124,437
4,084,973	4,099,784	4,107,999	4,124,652
4,085,361	4,100,133	4,109,006	4,124,678
4,087,501	4,100,295	4,109,256	4,125,025
4,088,185	4,100,688	4,109,354	4,125,735
4,089,513	4,100,820	4,109,542	4,126,562
4,089,659	4,100,837	4,109,714	4,127,584

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program, Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service, Office of Government Inventions and Patents, Springfield, Va. 22161

Patent Application 950,943. Improved Method and Apparatus for Detecting Clear Air Turbulences. Filed Oct. 13, 1978.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 921,140. Electronic Tripod Technique. Filed June 30, 1978.

Patent 4,090,446. Controlled Depth of Burial Penetrator. Filed Feb. 2, 1977. Patented May 23, 1978. Not available NTIS.

Patent 4,091,279. Method and Means for Equalizing the Sensitivity of a Multi-Element Sensor Array. Filed Mar. 23, 1976. Patented May 23, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 882,285. Passive Optical Rangefinder-Sextant. Filed Feb. 28, 1978.

Patent application 908,185. Scanner. Filed May 22, 1978.

Patent application 922,401. Dual Pyroelectric Vidicon Infrared Camera. Filed July 6, 1978.

Patent 4,053,867. Acoustic Hologram Reconstructor Using Surface Acoustic Wave Devices. Filed Dec. 22, 1975. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,077,326. Impulse Compensated Continuous Rod Warhead. Filed Mar. 19, 1970. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,090,449. Method for Synchronizing Point Detonating Arming With Controlled Variable Time Detonating Arming in Military Fuzes. Filed Jan. 19, 1970. Patented May 23, 1978. Not Available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 925,899. 2-Amino-4-Ethynylphenol. Filed July 19, 1978.

Patent application 925,900. Fluorocarbon Ether Bibenzoxazole Oligomers Containing Reactive Acetylenic Terminal Groups. Filed July 19, 1978.

Patent application 926,059. Microwave Power Level Stabilizing Circuit for Cesium Beam Frequency Standards. Filed July 19, 1978.

Patent application 926,358. Floating Head Laser Mirror Assembly. Filed July 20, 1978.

Patent application 928,329. Mechanical Munition Flight Environment Sensor. Filed July 26, 1978.

Patent application 932,986. Speckle Suppression of Holographic Microscopy. Filed Aug. 8, 1878.

Patent 4,091,279. Method and Means for Equalizing the Sensitivity of a Multi-Element Sensor Array. Filed Mar. 23, 1976. Patented May 23, 1978. Not available NTIS.

Patent 4,094,730. Method for Fabrication of High Minority Carrier Lifetime, Low to Moderate Resistivity, Single Crystal Silicon. Filed Mar. 11, 1977. Patented June 13, 1978. Not available NTIS.

Patent 4,095,331. Fabrication of an Epitaxial Layer Diode in Aluminum Nitride on Sapphire. Filed Nov. 4, 1976. Patented June 20, 1978. Not available NTIS.

Patent 4,095,420. Augmentor Outer Segment Lockout and Fan Upmatch. Filed Apr. 26, 1977. Patented June 20, 1978. Not available NTIS.

Patent 4,096,509. MNOS Memory Transistor Having a Redeposited Silicon Nitride Gate Dielectric. Filed July 22, 1976. Patented June 20, 1978. Not available NTIS.

Patent 4,096,804. Plastic/Mischmetal Incendiary Projectile. Filed Mar. 10, 1977. Patented June 27, 1978. Not available NTIS.

Patent 4,097,776. Coated Electroluminescent Phosphors. Filed Mar 25, 1977. Patented June 27, 1978. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services Division, Federal Building, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 897,083. Method of Protecting Proteins for Animal Feed. Filed Apr. 17, 1978.

Patent application 932,080. Precooked Baking Potatoes. Filed Aug. 8, 1978.

Patent application 934,288. Antibacterial Textile Finishes Utilizing Zinc Acetate and Hydrogen Peroxide. Filed Aug. 17, 1978.

Patent 4,113,567. Insolubilization of Enzymes on Modified Phenolic Polymers. Filed Aug. 25, 1977. Patented Sept. 12, 1978. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St., SW., Washington, D.C. 20590

Patent 4,103,547. Locomotive Track Curvature Indicator. Filed Feb. 7, 1977. Patented Aug. 1, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW., Washington, D.C. 20240

Patent application 920,513. Method of Continuously Determining Radiation Working Level Exposure. Filed June 29, 1978.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 899,956. Energy Absorber. Filed Apr. 25, 1978.

Patent 4,063,215. High Fidelity Low Frequency Transducer for Use at Great Depth. Filed Feb. 28, 1977. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,085,627. Elliptical Flywheel Apparatus. Filed July 22, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,085,795. Method for Using Geothermal Energy. Filed May 10, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,089,162. Accommodating Device for Thermal Transient Expansions. Filed Sep. 3, 1976. Patented May 16, 1978. Not available NTIS.

Patent 4,089,492. Ocean Adapted Airship. Filed Jan. 27, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,091,711. Rotary Bolt Liquid Propellant Gun. Filed May 26, 1977. Patented May 30, 1978. Not available NTIS.

Patent 4,091,731. Fuel Injection With Flameholding. Filed July 6, 1976. Patented May 30, 1978. Not available NTIS.

Patent 4,091,732. Fuel Injection. Filed July 6, 1976. Patented May 30, 1978. Not available NTIS.

Patent 4,092,383. Modification of Ballistic Properties of HMX by Spray Drying. Filed Aug. 15, 1977. Patented May 30, 1978. Not available NTIS.

Patent 4,093,380. Optical Systems Utilizing Three-Wave Heterodyne Detector. Filed Nov. 4, 1976. Patented June 6, 1978. Not available NTIS.

Patent 3,695,951. Pyrotechnic Composition. Filed June 25, 1970. Patented Oct. 3, 1972.

Patent 4,093,976. Acousto-Optic Image Scanner. Filed Aug. 26, 1976. Patented June 6, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 929,087. Visible and Infrared Polarization Ratio Spectroreflectometer. Filed July 28, 1978.

Patent application 943,087. Hypersonic Airbreathing Missile. Filed Sept. 18, 1978.

Patent 4,087,975. Ocean Thermal Plant. Filed Mar. 29, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,088,954. Magnetometer With a Miniature Transducer and Automatic Scanning. Filed Mar. 19, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,091,613. Independent Power Generator. Filed July 30, 1976. Patented May 30, 1978. Not available NTIS.

Patent 4,093,156. Supersonic Transport. Filed Aug. 27, 1976. Patented June 6, 1978. Not available NTIS.

Patent 4,093,917. Velocity Measurement System. Filed Oct. 6, 1976. Patented June 6, 1978. Not available NTIS.

Patent 4,094,073. Angle Detector. Filed Nov. 10, 1976. Patented June 13, 1978. Not available NTIS.

Patent 4,116,131. Solid Propellant Motor. Filed May 13, 1970. Patented Sept. 26, 1978. Not available NTIS.

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	Sunnyvale Patent Library*	(408) 736-0795
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 18, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-19-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-29-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-22-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-1-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-16-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-11-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during November 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,007,169 to 3,001,168, inclusive
Plant Patents..... Numbers 2,101 to 2,107, inclusive

REISSUES

FEBRUARY 13, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,904

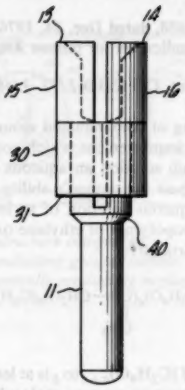
CRYOGENIC CONNECTION METHOD AND MEANS

Christopher L. Fischer, Sunnyvale, and Richard F. Otte, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Original No. 3,740,839, dated Jun. 26, 1973, Ser. No. 157,890, Jun. 29, 1971. Application for reissue Aug. 27, 1975, Ser. No. 608,164

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—628 19 Claims



17. A circuit assembly comprising in combination:

a. a plurality of individual circuit boards in a spaced relationship and

b. plural interconnect means for adjoining the circuit boards in said spaced relationship, each of said interconnect means being mounted in an aperture in a circuit board and comprising:

i. a forked member having at least two tines and an elongate pin portion, said forked member being mounted in said aperture so that the tines and the elongate pin portion are disposed on opposite sides of said circuit board, the tines being capable of being moved inwardly and when so moved to exert an outward force, and

ii. a band of a metallic material capable of having the property of heat recoverability imparted thereto and capable of changing dimension so as to increase the transverse dimension of said band with the application of the force applied by said forked member when the band is cooled to a temperature at where it exists in the martensitic state and further being capable of changing dimension so as to decrease the transverse dimension without the application of external force when warmed to a temperature at which it exits in its austenitic state, said band being large enough to permit it to be force around at least a portion of the exterior of said tines when in its martensitic state and being small enough to move said tines inwardly when warmed to its austenitic state;

the elongate portion of selected interconnect means being received in and held by the tines of selected other interconnect means when said band is in its austenitic state to maintain the circuit boards in said spaced relationship.

Re. 29,905

FEED APPARATUS FOR AUTOMATIC LATHE

Philippe Scheurer, Bas-du-Village, 2802 Develeir, Berne, Switzerland

Original No. 3,945,506, dated Mar. 23, 1976, Ser. No. 514,785, Oct. 15, 1974. Application for reissue Mar. 22, 1978, Ser. No. 889,144

Claims priority, application Switzerland, Oct. 16, 1973, 14638/73

Int. Cl.[2] B65H *5/16*

U.S. Cl. 214—1.2 14 Claims

1. A feed apparatus for an automatic lathe having a headstock equipped with a collet opening at the end of each working cycle of said lathe, comprising:

at least one tube arranged for being disposed in alignment with said headstock for guiding a piece of bar stock engaged in said headstock, the front end of said tube being near said headstock and the rear end of said tube being remote from said headstock,

means for exerting pressure upon said bar stock for preventing it from remaining axially integral with said collet when said collet opens,

wherein said means for exerting pressure comprise: a piston engaged with clearance in said tube, said clearance forming a passage bypassing said piston,

means provided on said piston for pushing said bar stock towards said headstock responsive to a movement of said piston towards said headstock, and

a hydraulic arrangement adapted for supplying oil under pressure at said rear end of said tube and thereby urging said piston with said bar stock towards said headstock, said piston including:

an inner channel having an adjustable cross-section and being operatively parallel to said passage formed by said clearance, and

regulating means in said inner channel for adjusting said cross-section of said inner channel, wherein said oil supplied under pressure by said hydraulic arrangement passes by said piston with loss of pressure through said passage and through said inner channel in an amount determined by said regulating means.

Re. 29,906

APPARATUS FOR MOUNTING SEMICONDUCTOR DEVICES

Sydney Jackson, Hayfield, and Alan A. Shepherd, Bramhall, both of England, assignors to Ferranti Limited, Hollinwood, England

Original No. 3,931,922, dated Jan. 13, 1976, Ser. No. 327,638, Jan. 29, 1973. Continuation-in-part of Ser. No. 307,374, Nov. 17, 1972, abandoned. Application for reissue Jun. 30, 1977, Ser. No. 811,834

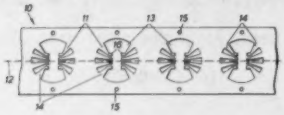
Claims priority, application United Kingdom, Jan. 29, 1972, 4259/72; Aug. 30, 1972, 40169/72

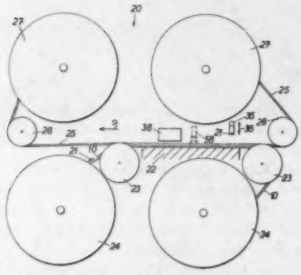
Int. Cl.[2] H01L *21/58*

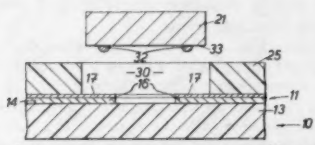
U.S. Cl. 228—6 A 30 Claims

1. Apparatus for mounting semiconductor devices each of which are rectangular-shaped in plan and having contacts thereon, *said apparatus* comprising a continuous strip including

a plurality of lead frames, the lead frames being uniformly spaced along the longitudinal axis of the strip, each lead frame having a matrix of conductors, the end portions of which are adapted for connection to contacts of a corresponding semiconductor device, a masking member defining at least one rectangular-shaped aperture for accurately locating a semiconductor device, means for feeding the lead frame strip and masking member longitudinally between a first and a second station with the aperture defined in the masking member being in a desired registration on a lead frame of the lead frame strip such that the conductor end portions of that lead frame are







exposed through the aperture, means at one of said stations for precisely positioning the lead frame and the masking member with respect to each other such that when a corresponding semiconductor device is inserted in the required orientation into the aperture each device contact is exclusively opposite to a co-operating conductor end portion, *means for inserting a semiconductor device into the aperture of the masking member* and bonding means disposed between said first and said second station and adjacent the paths of travel of said lead frame strip and masking member for bonding the device contacts to the cooperating conductor end portions.

Re. 29,907

Patent Not Issued For This Number

Re. 29,908

PROCESS FOR CLARIFICATION OF OIL-CONTAINING WASTE

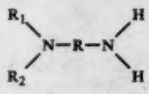
William J. Fowler, Berlin, N.J.; Richard A. Heberle, Holland, Pa.; Richard G. Tonkyn, Cornwells Heights, Pa., and Norman Vorchheimer, Buckingham, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Original No. 4,059,515, dated Nov. 22, 1977, Ser. No. 779,193, Mar. 18, 1977. Continuation of Ser. No. 607,863, Aug. 26, 1975, abandoned, and a continuation-in-part of Ser. No. 380,640, Jul. 19, 1973, Pat. No. 3,915,904, which is a division of Ser. No. 283,889, Aug. 25, 1972, abandoned. Application for reissue Feb. 22, 1978, Ser. No. 879,981

Int. Cl.[2] B01D *17/02*

U.S. Cl. 210—51 **18 Claims**

1. A process for separating oil from oil-containing wastewater which comprises treating the wastewater with a water-soluble cationic polymer consisting essentially of the product of the polymerization of an epihalohydrin with an alkylene polyamine having the formula



wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from 1 to about 6 carbon atoms.

Re. 29,909

METHOD OF CLEANSING CONTAMINATED WOUNDS

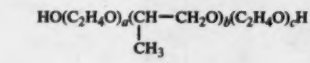
Leonard D. Kurtz, Woodmere, N.Y., assignor to Deknatel Inc., Long Island, N.Y.

Original No. 3,997,458, dated Dec. 14, 1976, Ser. No. 460,451, Apr. 12, 1974. Application for reissue Aug. 4, 1977, Ser. No. 821,963

Int. Cl.[2] C11D *1/72, 3/48*

U.S. Cl. 252—89 R **8 Claims**

1. In the cleansing of contaminated wounds with a surgical scrub solution, the improvement which comprises employing as the surgical scrub solution an aqueous detergent solution which does not impair the wound's ability to resist infection, consisting of an aqueous solution of at least about 10% by weight of a block copolymer of ethylene oxide and propylene oxide having the structure:



wherein the ratio of $(C_2H_4O)_{a+c}$ to $_b$ is at least about [4:1] *3:1* said copolymer having an average molecular weight of about 5,000 to 15,500.

Re. 29,910

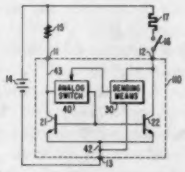
CURRENT MIRROR AMPLIFIER

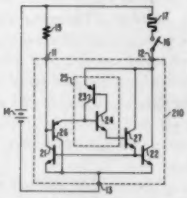
Adel A. A. Ahmed, Clinton Township, County of Hunterdon, N.J., assignor to RCA Corporation, New York, N.Y.

Original No. 3,973,215, dated Aug. 3, 1976, Ser. No. 601,831, Aug. 4, 1975. Application for reissue Feb. 22, 1978, Ser. No. 880,233

Int. Cl.[2] H03F *1/14, 3/04*

U.S. Cl. 330—51 **26 Claims**





1. In combination:

a current mirror amplifier having an input current path

between an input terminal and a common terminal, and an output current path between an output terminal and said common terminal; and

means responsive to the cessation of current flow in said output current path for discontinuing the flow of current through said input current path.

Re. 29,911

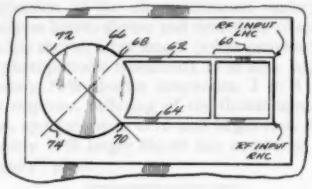
MICROSTRIP ANTENNA STRUCTURES AND ARRAYS

Robert E. Munson, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Original No. 3,921,177, dated Nov. 18, 1975, Ser. No. 352,005, Apr. 17, 1973. Application for reissue Nov. 18, 1977, Ser. No. 852,730

Int. Cl.[2] H01Q *1/38, 3/26*

U.S. Cl. 343—700 MS **19 Claims**



18. An antenna structure comprising:

an electrically conducting ground surface,

a single layer electrically conducting surface comprising both an r.f. radiator conducting area and an r.f. feedline conducting area integrally connected thereto,

a dielectric sheet disposed between said ground surface and the single layer electrically conducting surface,

said r.f. feedline being connected at the outside edge of said r.f. radiator conducting area to only one predetermined point on the periphery of said radiator conducting area to achieve an r.f. radiation pattern having predetermined circular or elliptical polarization characteristics from said radiator,

said r.f. radiator conducting area including means dimensioned differently in two mutually orthogonal directions, said means providing two corresponding predetermined complex-valued electrical impedances along said directions at the intended r.f. operating frequency, which two complex-valued impedances are interrelated so as to produce the desired predetermined circular or elliptical r.f. polarization characteristic.

Re. 29,912

ILEX VERTICILLATA BUSH NAMED WINTER RED

Robert C. Simpson, 1504 Wheatland Rd., Vincennes, Ind. 47591

Original No. dated Dec. 8, 1977, Ser. No. 746,477, Dec. 1, 1976. Application for reissue Feb. 16, 1978, Ser. No. 878,330

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct variety of Ilex verticillata plant as herein shown and described, characterized by abundant fruit and the retention of the brilliant red fruit coloration, *often* retaining this characteristic from October through March, its easy propagation from cuttings, and its vigorous growth habit.

PLANT PATENTS

GRANTED FEBRUARY 13, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,377
CHRYSANTHEMUM PLANT NAMED HARTMANN'S DIGNITY

Fred B. Hartmann, Kirkwood, Mo., assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Sep. 29, 1977, Ser. No. 837,744
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A selection of the chrysanthemum variety "Dignity" substantially as herein shown and described, characterized by its 2–3 inches shorter stem length (when provided 3 long-day weeks of photoperiodic treatment), 15 to 20% larger leaf size, approximately 10% shorter internodes, 2 to 4 days earlier flowering response, reflexing of ray florets upon full bloom maturation, approximately 1/16 inch larger stem diameter and approximately 15% larger bloom size compared to the standard "Dignity" plant.

4,378
ALMOND TREE

James C. Bell, 1699 East Ave., Chico, Calif. 95926, assignor to James C. Bell and Elberta F. Bell, both of Chico, Calif.

Filed Oct. 11, 1977, Ser. No. 841,318
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, which is dense, medium size, vigorous, spreading in branching habit, abundantly foliated with medium size, medium green, acuminate leaves having a crenate margin, blooms early with pink flowers, and is a regular and heavy producer—in clusters on short spurs—of large, elongated, paper shell, well-sealed nuts which hang well on tree, and have a medium harvest period and a relatively high percentage of kernel to nut; the present variety, in particular comparison to the Ne Plus Ultra, being characterized by a branching habit which, while essentially spreading, is more upright and easier to knock at harvest, by thicker foliage, by pink bloom rather than white bloom, by an apparent immunity to brown rot, and by nuts easier to hull and having a softer shell; the present variety being in bloom four or five days before the Nonpareil and in harvest with the Ne Plus Ultra.

4,379
HONEYSWEET PEAR TREE

Jules Janick, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Jan. 3, 1978, Ser. No. 866,678
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct pear tree substantially as shown and described.

4,380
DISTINCT VARIETY OF KENTUCKY BLUEGRASS (*POA PRATENSIS*)

Robert J. Buker, West Lafayette, and Philip R. Troutman, Battleground, both of Ind., assignors to FFR Cooperative, West Lafayette, Ind.

Filed May 26, 1978, Ser. No. 910,140
Int. Cl.[2] A01H *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of bluegrass plant, *Poa pratensis*, substantially as described and illustrated, and particularly characterized by a medium-green color, highly apomictic, vigorous rhizome production, and good disease tolerance.

PATENTS

GRANTED FEB. 13, 1979

ERRATA

For CLASS	See PATENT NO.
016–018 R	4,138,763
040–158 R	4,138,786
040–618	4,138,787
042–001 R	4,138,788
042–065	4,138,789
043–012	4,138,790
043–042.15	4,138,791
043–042.24	4,138,792
043–043.13	4,138,793
043–043.14	4,138,794
043–044.89	4,138,795
043–061	4,138,796
043–001 R	4,138,797
046–059	4,138,798
046–086 R	4,138,799
046–180	4,138,800
047–058	4,138,801
047–058	4,138,802
047–067	4,138,803
051–168	4,138,804
052–118	4,138,805
052–149	4,138,806
052–309.3	4,138,807
052–459	4,138,808
405–171	4,138,853
074–045	4,138,897
138–089	4,139,005
237–008 R	4,139,152
358–106	4,139,306
422–056	4,139,346
252–051.5 A	4,139,417
208–111	4,139,433
521–032	4,139,499
521–136	4,139,501
423–139	4,139,502
521–112	4,139,503
528–109	4,139,524
528–302	4,139,525
544–234	4,139,530
546–106	4,139,531
546–099	4,139,532
546–156	4,139,533
546–074	4,139,534
546–275	4,139,535
546–317	4,139,536

546–309	4,139,537
562–540	4,139,556
568–679	4,139,566
568–613	4,139,567
427–197	4,139,613
528–280	4,139,694
260–567.6 P	4,139,718
340–707	4,139,803
365–001	4,139,886

PATENTS

GRANTED FEBRUARY 13, 1979

GENERAL AND MECHANICAL

4,138,742
CONVERTIBLE CUSHION

Dwight S. Meeks, 470 Fairview Rd. SW., Camden, Ark. 71701

Continuation-in-part of Ser. No. 650,617, Jan. 20, 1976, Pat. No. 4,060,852. This application Nov. 4, 1977, Ser. No. 848,481
Int. Cl.[2] A41D *9/00*
U.S. Cl. 2—84 **10 Claims**

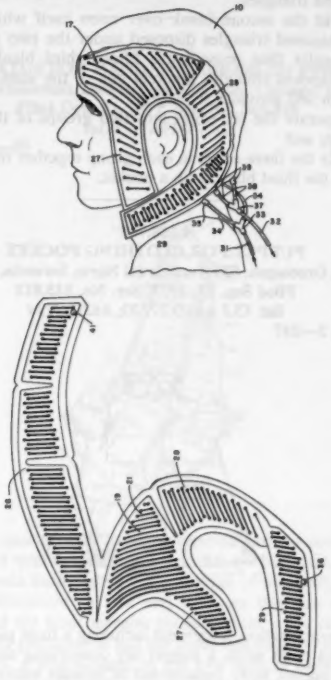
1. A convertible cushion comprising:
(a) a protective garment;
(b) a cushion pad attached to the inside rear portion of said protective garment with one end of said cushion pad substantially coextensive with the bottom hem line of said protective garment;
(c) a cover panel spanning the width of said cushion pad and attached to said protective garment along said bottom hem line and on each side of said cushion pad in substantially perpendicular relationship to said bottom hem line; and
(d) a pocket formed in said cover panel to permit said protective garment to be folded between said cover panel and said cushion pad, and said pocket to be folded over said protective garment and over the end of said cushion pad opposite said one end to removably secure said protective garment between said cushion pad and said cover panel.

4,138,743
LIQUID COOLED HELMET

William Elkins, San Jose, and Bill A. Williams, Morgan Hill, both of Calif., assignors to Acurex Corporation, Mountain View, Calif.

Continuation of Ser. No. 553,030, Feb. 25, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,970
Int. Cl.[2] A42B *1/04*
U.S. Cl. 2—171.2 **5 Claims**

2. A liquid cooled helment having an elastic cap adapted to fit on the head of a person and conform closely to the non-planar contour of the head, a flexible liner mounted inside the cap for engagement with the head and having a plurality of passageways for carrying a liquid coolant, and inlet and outlet flow lines connected to the liner and communicating with the passageways for carrying the coolant to and from said passageways, wherein the liner is formed by the steps of superposing two flat sheets of flexible material, joining the two sheets together along a plurality of lines spaced inwardly of the periphery of the sheets to form the passageways, forming the superposed sheets to the non-planar contour of the cap, and securing the superposed sheets to the cap in position to be

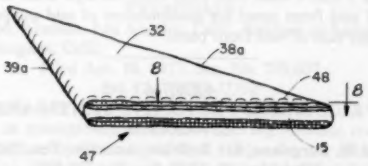


pressed against the head by the cap when the helmet is placed on the head.

4,138,744
REVERSIBLE, MULTI PURPOSE, MULTI STYLABLE STRUCTURE

Michael A. Pitzel, 5333 Baltimore Dr. #16, La Mesa, Calif. 92041

Filed Nov. 4, 1977, Ser. No. 848,430
Int. Cl.[2] A42B *1/00*; A42C *1/00*
U.S. Cl. 2—192 **22 Claims**



1. A method for constructing a reversible, multi purpose, multi stylable structure for use as a hat, a pouch, a muff, and a puppet from an equilateral triagle blank having three edges, the method comprising:
(a) divide the equilateral blank into six equal 30°-60°-90° triangles by drawing lines from the midpoint of each edge to the angle opposite thereof;
(b) fold the equilateral blank over upon itself with three of

the 30°-60°-90° triangles juxtaposed on the other three 30°-60°-90° triangles to provide a folded first blank;

(c) fold the first blank over upon itself with two of the juxtaposed triangles juxtaposed on two adjacent juxtaposed triangles thus providing a folded second blank with four juxtaposed triangles disposed adjacent two juxtaposed triangles;

(d) fold the second blank over upon itself with the four juxtaposed triangles disposed under the two juxtaposed triangles thus providing a folded third blank with six juxtaposed triangles wherein one of the sides thereof is open and provides six edges;

(e) separate the six edges into two groups of three edges each; and

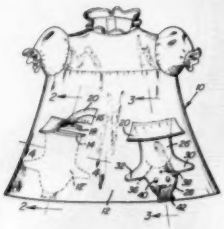
(f) affix the three edges in each group together thus providing the third blank with a pocket.

4,138,745

PUPPET FOR CLOTHING POCKET

Alice H. Greenspan, 539 Avenida del Norte, Sarasota, Fla. 33581

Filed Sep. 15, 1977, Ser. No. 833,812
Int. Cl.[2] A41D *27/20;* A63H *3/14*
U.S. Cl. 2—247 **3 Claims**



1. In combination, a garment including a front panel having inner and outer sides, a puppet toy comprising an elongated tubular puppet body constructed of flexible material and including three inwardly opening hollow fingerstall portions at one closed end portion of said body defining a central head portion and opposite side arm portions, the other end portion of said body defining a hand entrance opening therein for the reception of a hand into said tubular body from said other end portion thereof, said front panel including a pocket opening formed therein, said hand entrance opening being secured to said front panel about said pocket opening, said body being receivable, in inside-out condition on the inner side of said front panel to define a pocket into which said pocket opening opens and being displaceable outwardly of said pocket opening on the outer side of said front panel is outside-out condition to define said puppet toy, said front panel having an access opening therein closely adjacent said pocket opening adapted to receive a user's hand and wrist therethrough from the outer side of said front panel for manipulation of said puppet from the inner side of said front panel.

4,138,746

FACE SHIELD PROTECTIVE SYSTEM AND APPARATUS

Donald W. Bergmann, 811 Bellview, Amarillo, Tex. 79106

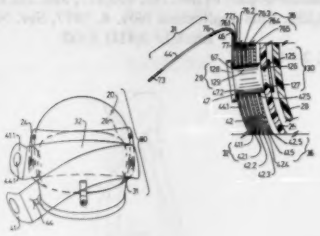
Filed Mar. 28, 1977, Ser. No. 781,857
Int. Cl.[2] A42B *3/00;* A61F *9/02*
U.S. Cl. 2—424 **12 Claims**

11. For use in conjunction with a face shield having spaced apart projections extending therefrom, a series of adjacent auxiliary lens each comprising:

an elongate, unitary body of thin, flexible, dimensionally stable, transparent plastic material defining a grasping ear portion extending to a central lens portion extending to a follower end portion;

said grasping ear portion having a grasping hole formed therethrough;

said central lens portion having a projection receiving hole formed therethrough in the region adjacent the grasping ear hole for receiving one of the projections of the face shield and thereby securing one end of the lens to the face shield, and



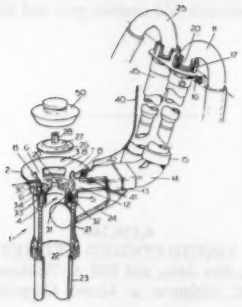
said follower end portion having a projection receiving hole formed therethrough for receiving the other projection of the face shield and thereby securing the other end of the lens to the face shield said grasping hole in said grasping ear portion and the projection receiving hole in said central lens portion of each underlying auxiliary lens being adapted to simultaneously receive one of the projections of the face shield.

4,138,747

DRAINAGE FITTINGS AND/OR WASH-HOUSE FITTINGS

Jan G. H. Zijlstra, Auckland, New Zealand, assignor to Ahi Operations Limited, Auckland, New Zealand

Filed Nov. 9, 1976, Ser. No. 740,344
Claims priority, application New Zealand, Nov. 19, 1975, 179293
Int. Cl.[2] A47K *1/14;* E03C *1/26*
U.S. Cl. 4—286 **13 Claims**



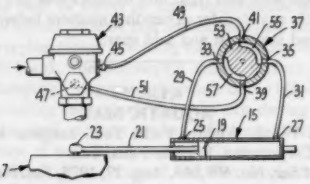
1. A drainage fitting comprising a hollow member having a first inlet thereto and an outlet therefrom, and having a wall defining a passageway extending from said first inlet to said outlet, said hollow member being formed in said wall with at least one aperture positioned between said first inlet and said outlet and forming a second inlet to said hollow member, and the fitting further comprising a closure member which can be positioned within said hollow member to substantially close the passageway between said first inlet and said outlet while leaving said first inlet in communication with said second inlet, and means within said hollow member whereby said closure member can be positioned within said hollow member at a location between said second inlet and said outlet.

4,138,748

HYDRAULIC OPERATOR FOR WATER CLOSET

Stefan Zielinski, Burlingame, Calif., assignor to Aluminum Plumbing Fixture Corp., Burlingame, Calif.

Filed Sep. 26, 1977, Ser. No. 836,306
Int. Cl.[2] E03D 11/12
U.S. Cl. 4—312 **1 Claim**



1. In a water closet mounted for pivoting in a horizontal plane from a first position to a second position relative to a fixed mounting and provided with a source of water for flushing, the improvement comprising:

a. an hydraulic cylinder attached between said fixed mounting of said water closet and a point on said water closet,

b. a flush valve having an inlet side connected to said water source and a discharge side,

c. conduit means connecting the inlet and discharge sides of the flush valve to opposite sides of the hydraulic cylinder, and

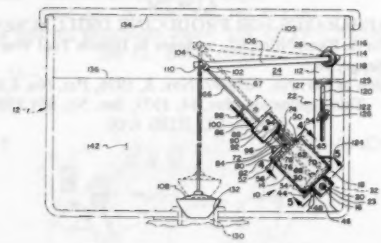
d. control means for selectively reversing the conduit connections between the flush valve and the hydraulic cylinder to pivot the water closet between said first and second positions.

4,138,749

TWO-STAGE HYDRAULIC FLUSH CONTROL DEVICE

Merlin W. Clark, Rte. 1, Box 171, Spanish Fork, Utah 84660

Filed Aug. 4, 1977, Ser. No. 821,677
Int. Cl.[2] E03D 1/14, 1/34
U.S. Cl. 4—388 **17 Claims**



1. A hydraulic flush device in combination with a water closet having a water tank, a flush handle lifting arm, and a drain plug connected to the lifting arm, said hydraulic flush device being selectively adjustable to control the amount of water released when flushing said water closet and comprising:

a hollow cylinder submersibly disposed within the water tank, said cylinder having a first end and a second end, at least one of said ends comprising inlet valve means for admitting water unidirectionally into the hollow of said cylinder and outlet valve means for expelling water from said cylinder, said outlet valve means comprising means for selectively varying the rate at which water is expelled from said cylinder;

a reciprocable piston disposed within the cylinder;

means for joining said piston to said lifting arm so as to displace said piston simultaneously with the opening of said drain plug, the displacement of said piston drawing water through said inlet valve means into the hollow of said cylinder; and

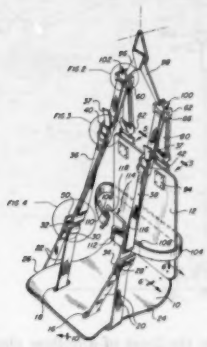
means for urging the piston against the water admitted into the cylinder so as to return said piston and the drain plug connected to said lifting arm to their initial rest positions as water is expelled by said piston through the outlet valve means.

4,138,750

APPARATUS FOR HANDLING DISABLED PERSONS

Joseph Michalowski, 5841 S. Nashville Ave., Chicago, Ill. 60638

Filed Dec. 27, 1977, Ser. No. 864,826
Int. Cl.[2] A61G 1/02
U.S. Cl. 5—89 **5 Claims**



1. In an apparatus for handling disabled persons comprising a contoured semi-flexible seat, a semi-flexible back rest, a hinge to secure said back rest to the rear edge of said seat, spaced slotted perforations in said seat adjacent the side margins thereof and the front margins thereof, short webs extending through said perforations and the outer side edges of said seat, respectively, a ring secured to the free ends of each of said webs, elongated adjustable webs, bracket assemblies, each web engaging and extending downwardly from one of said bracket assemblies, a pair of hooks, each of said hooks secured to said elongated webs and engaging said rings, a buckle on each of said elongated webs through which the web extends for adjusting the length of each of said webs, spaced plates secured to said back rest, each having a slotted perforation, short endless webs each extending and secured to one of said bracket assemblies and the perforation in said plate, means on each of said bracket assemblies whereby the apparatus may be suspended from a lifter mechanism.

4,138,751

REMOVABLE FLUID SWIVEL FOR MOORING TERMINALS

James M. Kentosh, Los Angeles, Calif., assignor to Amtel, Inc., Los Angeles, Calif.

Filed Apr. 18, 1977, Ser. No. 788,637
Int. Cl.[2] B63B 21/52
U.S. Cl. 9—8 P **2 Claims**

1. In an arrangement wherein a mooring terminal comprising a column means extends from under the sea above the surface to provide ship mooring facilities at the surface, and said terminal supports a fluid swivel below the surface of the ocean whereby product may be brought to or taken from said ship, an improved fluid swivel comprising:

a fluid swivel having stationary wall means and rotatable wall means rotatably sealed to one another and defining therebetween a hollow chamber;

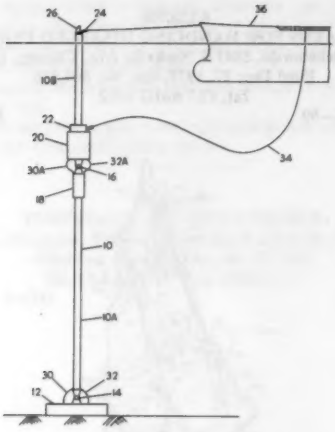
one of said wall means including an inner wall in the form of a hollow cylinder having an inner diameter sufficiently

large to be able to slide over said column means to a predetermined location below the surface of the ocean;

a first pipe connected to said chamber through the stationary wall means of said fluid swivel;

a second pipe connected to said chamber through the movable wall means of said fluid swivel; and

means for releasably fastening said fluid swivel to said column means at said predetermined location;



said inner wall in the form of a hollow chamber forming a wide hole which is wider than substantially any obstruction above it along said column means to the surface of the sea, so that said fluid swivel can be directly lifted to the surface of the sea along said column means when said fastening means is released.

4,138,752

MARINE BUOY

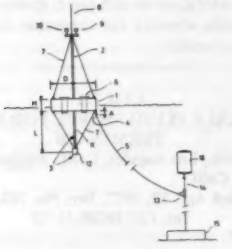
Peter G. Dickson, Cowes, England, assignor to Marine Exploration Limited, Cowes, England

Filed Apr. 14, 1977, Ser. No. 787,517

Claims priority, application United Kingdom, Apr. 26, 1976, 16799/76

Int. Cl.² B63G *21/52*

U.S. Cl. 9—8 R **16 Claims**



1. A marine buoy for floating at the surface of a body of water and carrying data measuring equipment, comprising a buoyant, rigid hull member of substantially cylindrical configuration, a mast, a keel wherein said keel further comprises a spar and a ballast weight attached to said spar, a plurality of guy wires having tensioning means for guying each of said mast and said spar to opposite ends of said hull member, a first coupling mounted externally on one end of said hull member for coupling an end of said mast to said hull member, a second coupling mounted externally on the opposite end of said hull member for coupling an end of said spar to said hull member, each of said couplings including a flexible or resilient member, said flexible members being disposed between said hull and the ends of said mast and said spar adjacent said hull respectively, whereby said guy wires are under tension and the coupled ends of said mast and said spar are compressively loaded resulting from the tension in said guy wires, said flexible members in combination with said rigid hull member and guy wires avoid substantially any transfer of bending moment between said hull member and said mast and said spar.

4,138,753

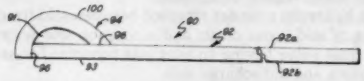
AQUATIC MAT

Robert L. Wood, Wichita Falls, Tex., assignor to Advanced Sports Corporation, Wichita Falls, Tex.

Division of Ser. No. 609,049, Aug. 29, 1975, Pat. No. 4,006,503, which is a continuation-in-part of Ser. No. 594,018, Jul. 8, 1975, abandoned. This application Nov. 19, 1976, Ser. No. 743,340

Int. Cl.² A47C *27/08*

U.S. Cl. 9—13 **12 Claims**



1. An aquatic floatation mat capable of floating in water and supporting one or more persons, comprising an elongated planar member having top and bottom planar surfaces and a headrest secured to and extending from an end portion of said planar member; said planar member and said headrest formed from closed cell, unicellular, plastic foam slab members, which are flexible, resilient and non-water absorbent, and which have a surface coating of a tough, pliable, plastic material; said headrest slab member having ends thereof secured to an end portion of said planar member, said headrest has a generally rounded shape and includes one open transverse void above said top planar surface.

4,138,754

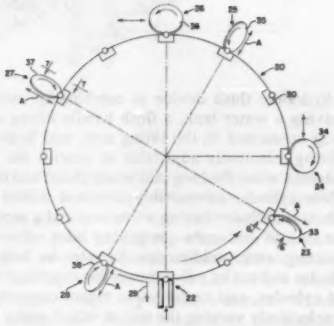
APPARATUS FOR PRODUCING DRILL SCREWS

Martin A. Baer, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 739,897, Nov. 8, 1976, Pat. No. 4,071,918. This application Nov. 14, 1977, Ser. No. 851,238

Int. Cl.² B23G *9/00*

U.S. Cl. 10—2 **7 Claims**



1. An apparatus for making screws having pointed entering end portions and oppositely disposed and inclined slots intersecting said end portions, comprising means for loading screw blanks onto a predetermined circular path, means for convey-

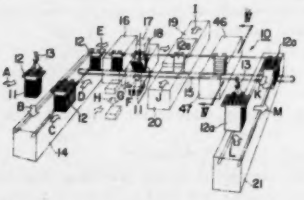
ing successive blanks having exposed shanks along a predetermined circular path of travel, the conveying means including pocket means at the periphery of said path for receiving and retaining the successive blanks therein, four work stations circumferentially spaced around and adjacent to the conveying means, each of said four work stations including movable support means for mounting rotary cutting saws to selectively intersect said path of travel to form longitudinal slots in the shanks of the blanks, at least one additional work station adjacent the conveying means including means to point the extremities of each blank, the conveying means further including means for clampingly engaging the heads of the blanks and for selectively rotating each blank about its axis during advancement between work stations so that a first predetermined peripheral section of each blank is cuttingly engaged by two of said rotary cutting saws at two of said four work stations and that a second predetermined peripheral section, oppositely disposed to said first predetermined peripheral section, is cuttingly engaged by the other two of said rotary cutting saws of said four work stations, wherein two of said four slotting saws are mounted for cuttingly engaging a peripheral secion of each blank at a first upper axial position on each shank while the other two of said four slotting saws are mounted for cuttingly engaging a peripheral section of each blank at a second, lower axial position on each shank.

4,138,755

POLISHING APPARATUS FOR ELECTROLYSIS MOTHER PLATE

Shigetoshi Hashimoto, Ageo, and Keisuke Nishiyama, Shimonoseki, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Nihonbashi-Maromachi, Japan

Filed Jun. 29, 1977, Ser. No. 811,151
Claims priority, application Japan, Jan. 13, 1977, 52-2791
Int. Cl.[2] B08B *13/02*
U.S. Cl. 15—77 **3 Claims**



1. An apparatus for removing corrosion from cathode mother plates stripped of metallic electrodeposits in a stripping system comprising a conveyor for carrying the metal plates stripped of said deposits, lift means above said conveyor adapted to grip and lift said plates vertically above said conveyor,

two polishing sections disposed adjacent to and at both sides of the said lift means, each including a head provided with cylindrical wire brushes on a plurality of horizontal shafts to polish the mother plates,

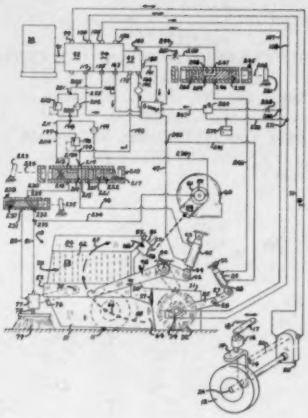
and horizontal and vertical means disposed on each said polishing sections to direct the respective heads horizontally and vertically in communication with the mother plates respectively.

4,138,756

SURFACE MAINTENANCE MACHINE DRIVE AND BRUSH

Keith N. Krier, Tonka Bay, and Richard A. Mason, Buffalo, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Oct. 3, 1977, Ser. No. 838,565
Int. Cl.[2] E01H *1/04*
U.S. Cl. 15—83 **11 Claims**



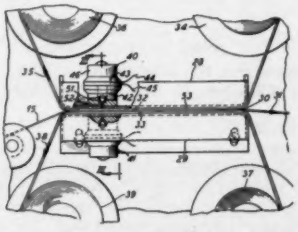
1. A surface maintenance machine having a frame, propulsion and steering wheels on the frame, a main surface cleaning brush, means for mounting the main brush on the frame, hydraulic motor first means for driving the propulsion wheel, hydraulic motor second means for driving the brush, a reversible variable displacement first pump, a variable displacement second pump, power source means for driving the pumps, first and second lines for conducting hydraulic fluid under pressure from the first pump to the first motor means and return fluid from the first motor means to the first pump, and third and fourth lines for conducting hydraulic fluid under pressure from the second pump to the second motor means and return fluid from the second motor means to the second pump.

4,138,757

ULTRASONIC FILM CLEANING APPARATUS

David Henderson, Mundelein, and David B. Digel, Chicago, both of Ill., assignors to Research Technology, Inc., Lincolnwood, Ill.

Filed Mar. 20, 1978, Ser. No. 888,195
Int. Cl.[2] B08B *11/00*
U.S. Cl. 15—100 **8 Claims**



1. An apparatus for cleaning a moving strip comprising:

a cleaning plane,

means for mounting the strip for relatively high speed movement within said cleaning plane,

means for positioning an absorbent cleaning medium against at least one surface of the moving strip and for providing continuous relative movement between the absorbent cleaning medium and the strip,

means adjacent the cleaning plane for moistening the absorbent cleaning medium with a cleaning solution, and

means providing ultrasonic cleaning waves within the moistened absorbent cleaning medium at the cleaning plane to enhance the cleaning action.

4,138,758

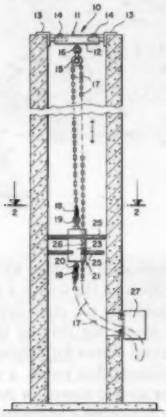
CHIMNEY CLEANING SYSTEM AND CHIMNEY CLEANING ELEMENT

Walton L. Dodge, and Wayne T. Dodge, both of Dodge Rd., North Edgecombe, Me. 04556

Filed Aug. 15, 1977, Ser. No. 824,648

Int. Cl.[2] F23J *3/00*

U.S. Cl. 15—243 **2 Claims**



1. In a chimney cleaning system including a support emplaced in a chimney, a pulley, said pulley depending from said support, line means running over said pulley, said line means having two ends, a chimney cleaning element including a weighted body portion, said weighted body portion including a ring at each opposite longitudinal end of said rigid body portion, each said ring centered in said weighted body portion, a longitudinal channel through said weighted body portion, said longitudinal channel eccentric in said weighted body portion, said channel adapted to pass said line therethrough, a plurality of coil springs extending from said weighted body portion in the form of loops, and one end of said line attached to one said ring, said line passing through said channel, said other end of said line attached to the other of said rings.

4,138,759

DUAL BLADE WIPER

John Voorhees, Box 476, Gravette, Ark. 72736

Filed Nov. 28, 1977, Ser. No. 855,383

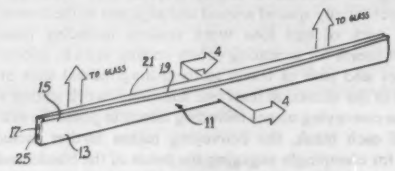
Int. Cl.[2] B60S *1/38*

U.S. Cl. 15—245 **10 Claims**

1. In a window glass wiper apparatus or the like,

a wiper element of elastomeric material having an elongated shape with a first long side being adapted to be held against a smooth surface and moved transverse to its longitudinal axis and a second long side adapted to be gripped in a wiper mechanism,

said wiper element having at least two blades separable at their edges along at least some of the length but less than all of the length of said first long side, said blades being joined along substantially all the length of said second long side, the two blades when separated and held against said smooth surface being capable of forming an enclosed space therebetween, said space having a variable volume dependent on the separation of said blades, said blades



including means at each end for at least partially joining said blades to form said enclosed space, and

at least one opening through said wiper element into said enclosed space.

4,138,760

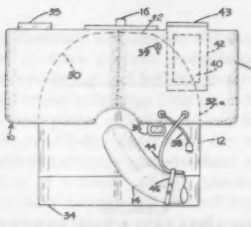
CARPET CLEANING ATTACHMENT

Michael D. Cadle, 150 Mitchell Blvd., San Rafael, Calif. 94903

Filed Dec. 30, 1977, Ser. No. 866,050

Int. Cl.[2] A47L *7/00*

U.S. Cl. 15—321 **6 Claims**



1. A carpet washing attachment for a tank-type vacuum cleaner comprising:

a vacuum tank enclosure having an upper surface and upright surfaces depending therefrom around the periphery thereof;

a vacuum hose having one end thereof connected to, and opening into, said tank enclosure; and

a suction attachment-receiving wand having one end thereof connected to the other end of said hose;

said carpet washing attachment comprising:

a fluid tank of a size and shape to be supported on said vacuum tank upper surface with portions of said fluid tank depending along said upright surfaces of said vacuum tank;

a fluid pump in said fluid tank;

a fluid duct connected to and extending from said pump;

means for securing said fluid duct along said vacuum hose and wand; and

a spray nozzle at the end of said fluid duct.

4,138,761

CONVERTIBLE WET/DRY VACUUM CLEANER

Jelle G. Nauta, R.R. #4, Stouffville, Ontario, Canada

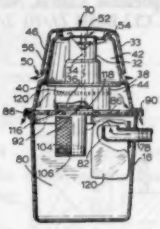
Filed Mar. 4, 1977, Ser. No. 774,315

Int. Cl.[2] A47L *7/00*

U.S. Cl. 15—353 **2 Claims**

1. A convertible vacuum cleaner which may be easily and quickly converted for use as a wet or dry vacuum cleaner without substantial change in physical structure comprising a containment vessel for receiving soil therein, a motor-air pump assembly being housed in a housing, the lower surface of which rests on and sealably engages the top of said contain-

ment vessel, such that said motor-air pump assembly is situated above said containment vessel during a wet or dry vacuuming operation, said housing having an exit aperture in the lower surface thereof for the egress of air from the containment vessel into said air pump, cylindrical boss means surrounding said exit aperture and extending downwardly from said lower surface into said containment vessel, said cylindrical boss having strainer means mounted in one side thereof to permit air to enter said boss through said strainer means, "Vee" shaped baffle means extending downwardly from the lower surface of said housing and surrounding said cylindrical boss, an elbow device in communication with a hose and wand pickup being



located in an upper sidewall of said containment vessel, said elbow device sealedly fitted therein projecting into the interior of said containment vessel in such manner to deflect any air/-soil mixture being delivered into said containment vessel by said elbow device in an upward direction toward the lower surface of said housing, at a location on said lower surface of said housing adjacent the apex of said "Vee" shaped baffle means, but remote from said cylindrical boss so that said "Vee" shaped baffle means is located between said cylindrical boss and said elbow device, said baffle means being selectably operable to perform its function only during a wet vacuum mode, and means for selectively mounting a filter bag means on said elbow device during a dry vacuuming mode.

4,138,762

APPARATUS FOR SUCKING UP DRY OR WET POLLUTANTS FROM THE FLOOR OR GROUND

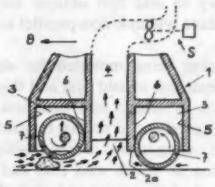
Theodor Jost, Zum Kleeblatt, Stein Am Rhein, Switzerland

Filed Jun. 22, 1976, Ser. No. 698,740

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1975, 2530126

Int. Cl.[2] A47L *9/02*

U.S. Cl. 15—419 **9 Claims**



1. Movable apparatus for sucking up both dry and wet pollutants from the floor or ground, said apparatus comprising:

a casing;

a mouthpiece in said casing, said mouthpiece being partially defined by a first plate on at least one side thereof, one edge of said first plate forming a first lip normally maintained at a predetermined distance above and substantially parallel to the ground;

means adapted for collecting the pollutants;

a suction channel leading from said mouthpiece to said collecting means;

means for creating the necessary vacuum in said suction channel;

a first guidance member mounted to said casing parallel with said first plate outside said mouthpiece; and

movable sealing means comprising at least one first roller normally loosely coupled to said casing for radial and rotational movement with respect thereto, said first roller being maintained generally parallel to and normally rolling along the ground with movement of said apparatus, said first roller being retained coupled to said casing outside said mouthpiece by means of said first guidance member;

whereby said first roller is slidingly held against said first plate at the side of said first lip away from said suction channel outside said mouthpiece by means of the vacuum created by said vacuum means, said first roller thereby effectively extending said mouthpiece from said first lip to the ground.

4,138,763

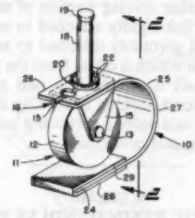
ATTACHABLE COASTER-LIKE DEVICE

Lawrence E. Cooley, 17536 Lake Shore Blvd., Cleveland, Ohio 44119

Filed Jan. 17, 1977, Ser. No. 759,789

Int. Cl.[2] B60B *33/00*

U.S. Cl. 16—18 R **9 Claims**



1. An attachment device for casters of the type having mounting stems comprising, base means for supporting a caster above the floor and means for removably attaching said base means to the caster, said means for removably attaching including an arm positioned above said base means, said arm being adapted for releasably retaining the stem of the caster, means for interconnecting said arm and said base means, flap means attached to the end of said base means opposite said means for interconnecting, said flap being deformable to a generally horizontal position to allow attachment of the device to the caster and to a generally vertical position to prevent removal of the device, and means for releasably locking the distal end of said flap means to said arm.

4,138,764

DEVICE FOR SCRUBBING SURFACES

Paul W. Eschenbach, Twin Lakes; Larry S. Satterfield; David B. McKinney, both of Spartanburg, and Barry N. Edge, Lyman, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 2, 1977, Ser. No. 821,165

Int. Cl.[2] A47L *9/04*

U.S. Cl. 15—320 **6 Claims**

1. A device for scrubbing surfaces, comprising:

a frame;

a crankshaft mounted on said frame and adapted for rotation about its longitudinal axis and having at least two driving portions which are offset from the longitudinal axis of said crankshaft;

a first shaft mounted on said frame;

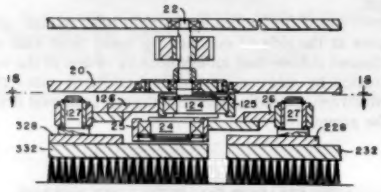
a first scrubbing means having a recessed portion, attached to said first shaft and adapted for angular oscillation relative to said frame;

a first coupling link, one end of which is pivotably attached to one driving portion of said crankshaft;

a first rocking link rigidly attached to said first scrubbing means and pivotably attached to said first coupling link at a position which is offset from the position at which said first shaft is attached to said first scrubbing means, said first rocking link being disposed between said frame and said first scrubbing means;

a second shaft mounted on said frame;

a second scrubbing means having a recessed portion,



mounted on said second shaft and adapted for angular oscillation relative to said frame, the recessed portions on said first and second scrubbing means being arranged so that as said scrubbing means angularly oscillate, the scrubbing means scrub over lapping areas but do not collide;

a second coupling link, one end of which is pivotably attached to the other driving portion of said crankshaft;

a second rocking link rigidly attached to said second scrubbing means and pivotably attached to said first coupling link at a position which is offset from the position at which said second shaft is attached to said second scrubbing means, said second rocking link being disposed between said frame and said second scrubbing means; and

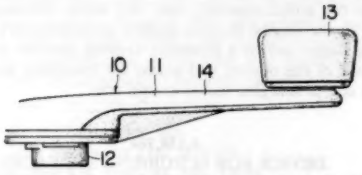
means for rotating said crankshaft.

4,138,765

THERMOPLASTIC RESIN HANDLES FOR VEHICLE DOORS

Takeo Yamazaki, Anjo, and Kuniyoshi Harada, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 16, 1976, Ser. No. 705,954
Claims priority, application Japan, Jul. 22, 1975, 50-89456
Int. Cl.² E05B *1/00*
U.S. Cl. 16—110 R **6 Claims**



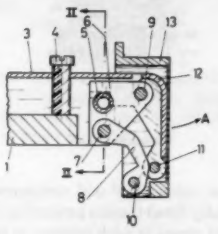
1. A handle structure for use on vehicles comprising a body member of slender form made from a thermoplastic resin, a shaft carried at one end of said body member, a knob rotatably carried at the other end, said knob disposed on a side of the body member opposite the shaft to define a crank-like handle adapted for use on a vehicle door to manually raise or lower a glass window on the door, and a sheet metal member covering a face portion of the body member on the same side as said knob, said sheet metal member including edges which define projections extending into said body member and each of which is provided with means for restraining said sheet metal member against separation from said body member, said projections being embedded in the underlying layer of the thermoplastic resin rendered temporarily molten by heat generated by frictional vibrational movement of the sheet metal member relative to said body member induced by application of supersonic wave energy.

4,138,766

HINGE WITH A LOCKING DEVICE

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Nov. 14, 1977, Ser. No. 851,586
Claims priority, application Austria, Nov. 23, 1976, 8701/76
Int. Cl.² E05D *11/10, 3/06*
U.S. Cl. 16—145 **7 Claims**



1. A hinge comprising:

a hinge arm;

a hinge casing;

a first hinge link having first and second opposite ends, said first end of said first link being connected to said hinge arm by a first axle, and said second end of said first link being connected to said hinge casing by a second axle;

a second hinge link having first and second opposite ends, said first end of said second link being connected to said hinge arm by a third axle, and said second end of said second link being connected to said hinge casing by a fourth axle;

said first and second links cooperating to form a quadrangular linkage connecting said hinge casing to said hinge arm, such that said hinge casing is movable about said quadrangular linkage between an open position and a closed position;

one of said hinge links having a first oblique surface which extends in a plane which is non-parallel to the axes of said axles;

a pressure lever having a second oblique surface which is complementary to said first oblique surface and which extends in a plane which is non-parallel to said axes of said axles;

said pressure lever being mounted for sliding movement axially of at least one of said first and third axles between a first position at which said first and second oblique surfaces are aligned and in mutual contact, thereby retaining said hinge casing in said closed position thereof, and a second position at which said first and second oblique surfaces are out of alignment and mutual contact;

spring means operatively positioned for urging said pressure lever from said second position thereof to said first position thereof; and

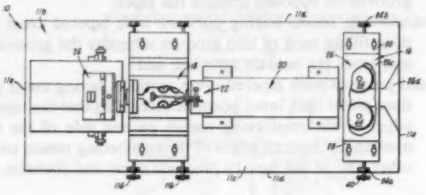
movement of said hinge casing from said closed position thereof to said open position thereof causing said first oblique surface of said one hinge link to be cammed against said second oblique surface of said pressure lever, thereby moving said pressure lever from said first position thereof to said second position thereof against the force of said spring means.

4,138,767

APPARATUS FOR DECASING FOOD LINKS

Charles E. Stiles, Tulsa, Okla., assignor to Actionite Company, Oklahoma City, Okla.

Division of Ser. No. 548,518, Feb. 10, 1975, Pat. No. 4,024,602.
This application Feb. 28, 1977, Ser. No. 772,723
The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.
Int. Cl.[2] A22C *11/02*
U.S. Cl. 17—1 F 14 Claims



1. An apparatus for removing the casing from a string of food links, comprising:

a frame;

accelerator means, supported on the frame, for accelerating the string of food links in a gripping mode to increase the linear velocity of the string of food links to a first velocity in a first direction of travel through the apparatus, the accelerator means having a free wheeling mode in which the accelerator means permits free passage of the string of food links when the string of food links is caused to move at a linear velocity greater than the first velocity;

main drive means, supported on the frame, for increasing the velocity of the string food links to a linear velocity greater than the first velocity, the main drive means receiving the string of food links from the accelerator means;

slitter means supported on the frame for imparting a slit in the casing of each of the food links; and

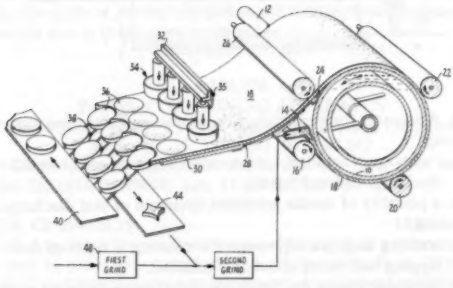
stripper means for removing the casing from the string of food links in a second direction while the food links continue in the first direction of travel.

4,138,768

APPARATUS AND METHOD FOR FORMING MEAT PATTIES

Eldon N. Roth, 1025 Tennessee St., San Francisco, Calif. 94107

Filed Mar. 17, 1977, Ser. No. 778,492
Int. Cl.[2] A22C *7/00*
U.S. Cl. 17—32 11 Claims



1. Apparatus for freezing a ground meat product into a sheet of predetermined thickness and for forming meat patties therefrom, said apparatus comprising:

a rotatable refrigerated drum having a heat conductive cylindrical surface;

extruding means for applying the ground meat product as a sheet upon the exterior surface of said drum, the temperatures of the drum surface and ground meat product being selected to cause adhesion of the ground meat product to the drum surface;

at least one compression roll positioned downstream of said extruding means and parallel with the rotatable axis of said drum, said roll being spaced a predetermined distance from the exterior surface of said drum for compressing said meat product to the desired predetermined thickness;

scraping means positioned downstream of said roll for stripping the sheet of meat product from the surface of said drum;

a patty-forming table positioned for receiving said sheet from said scraping means; and

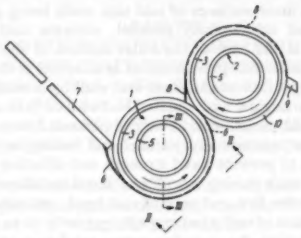
at least one bank of cutters positioned above said table and aligned across said sheet of meat product, said bank comprising at least one cutter assembly having a sharpened blade conforming to the desired shape of the patty and actuating means coupled to said cutter for driving said cutter through said sheet of meat product.

4,138,769

APPARATUS FOR MECHANICALLY PEELING SHRIMP AND SIMILAR CRUSTACEANS

Erik Andersen, Ballerup, Denmark, assignor to Matcon Radgivende Ingeniorfirma ApS, Denmark

Filed Mar. 28, 1977, Ser. No. 782,228
Claims priority, application Denmark, Apr. 21, 1976, 1795/76
Int. Cl.[2] A22C *29/02*
U.S. Cl. 17—73 4 Claims



1. Apparatus for mechanically peeling shrimp and similar crustaceans, comprising:

a first support means defining a concave cylindrical first shrimp supporting surface having an inlet end and an outlet end angularly spaced from said inlet end;

a rotatable first roller coaxial with said first shrimp supporting surface and defining therewith a first elongated gap of substantially constant depth perpendicular to said shrimp supporting surface and extending angularly from the inlet end to the outlet end thereof;

a second support means defining a concave cylindrical second shrimp supporting surface having an inlet end and an outlet end angularly spaced from said inlet end;

a rotatable second roller coaxial with said second shrimp supporting surface and defining therewith a second elongated gap of substantially constant depth perpendicular to said shrimp supporting surface and extending angularly from the inlet end to the outlet end thereof;

said outlet end of said first shrimp supporting surface being located adjacent and substantially tangential to the peripheral surface of said second roller, and said inlet end of said second shrimp supporting surface being located adjacent and substantially tangential to the peripheral surface of said first roller;

a plurality of stationary cutting elements projecting from each of said shrimp supporting surfaces towards the roller associated with each respective surface; and

drive means for rotating said first and second rollers in

opposite directions, whereby the rotating rollers cause a shrimp fed into said first elongated gap between said first shrimp supporting surface and said first roller at the inlet end of said first surface to be sequentially advanced through said gaps and at the same time pressed towards the projecting cutting elements.

4,138,770

BUNDLING TIE

Richard P. Barrette, Lancaster; John B. Glode, Jr., and Richard P. Olsen, both of Acton, Mass., assignors to Electro-Ty, Inc., Concord, Mass.

Filed Apr. 22, 1977, Ser. No. 790,121
Int. Cl.[2] B65D *63/00*
U.S. Cl. 24—16 PB **8 Claims**

1. In a bundling tie comprising a relatively rigid head and a relatively flexible strap integrally attached thereto and having ratchet teeth thereon, said head having a slot therethrough transverse to the strap and containing a pawl member having ratchet teeth complementary to those on said strap, the complementary ratchet teeth being capable of engaging in an interlocking relationship as the flexible strap is drawn through the transverse slot:

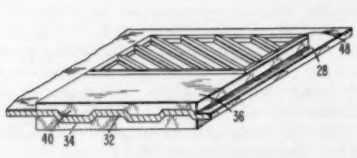
the improvement wherein the transverse slot is formed between first and second end walls and two side walls of said head, the inner surfaces of said side walls being generally planar and substantially parallel, wherein said strap is attached at the base of the outer surface of the first end wall, wherein said pawl member is attached at the base of the inner surface of said first end wall by a neck portion making an angle b with the first end wall of from about 23° to about 42°, said neck having upper and lower surfaces which are substantially parallel and having a thickness sufficient to provide pawl strength and effective locking, and said neck having a widened shoulder where it is attached to the first end wall of said head, and wherein the neck portion of said pawl extends upwardly to an enlarged portion having the complementary ratchet teeth thereon and defining an opening between the second end wall and the pawl having a width of less than the thickness of said strap.

4,138,771

SLIDE FASTENER HAVING A REINFORCED SEPARATING END STOP

Harry F. Manning, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Mar. 18, 1977, Ser. No. 779,005
Int. Cl.[2] A44B *19/24*
U.S. Cl. 24—205.11 F **3 Claims**



1. A slide fastener comprising in combination:

first and second stringer tapes having interengaging elements disposed along inner edges thereof and defining a longitudinal center of the slide fastener;

a slider movable to effect engagement and disengagement of said interengaging elements;

separating end stop means on said stringer tapes adjacent one end thereof to limit movement of said slider, said separating end stop means including first and second mating means on said first and second stringer tapes, respectively;

each of said stringer tapes having a reinforcing grid on its end and spaced transversely outwardly from said longitudinal center;

each of said stringer tapes having a preformed corrugated portion on its end extending from its mating means to its reinforcing grid;

said corrugated portions defining alternating ridges and grooves on opposite sides of the tapes;

reinforcing means having portions with tapered cross sections filling each of said grooves whereby the grooves of said tapes are entirely covered; and

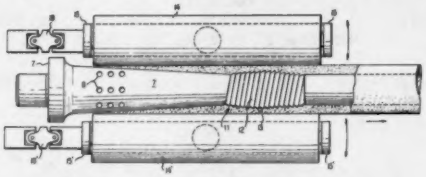
said portions with tapered cross sections having outer portions wider than inner portions thereof so that the tapered edges of the reinforcing means on one side of the tape overlap the tapered edges of the reinforcing means on the other side of the tape to preclude wear and abrasion.

4,138,772

APPARATUS FOR PRODUCING NEEDLED, NON-WOVEN TUBING

Richard Dilo, Eberbach-N, Fed. Rep. of Germany, assignor to Rontex America Inc., Chelmsford, Mass.

Division of Ser. No. 681,089, Apr. 19, 1976, Pat. No. 4,085,486, which is a continuation-in-part of Ser. No. 386,552, Aug. 8, 1973, Pat. No. 3,952,127, which is a division of Ser. No. 116,030, Feb. 17, 1971, Pat. No. 3,758,926, which is a continuation-in-part of Ser. No. 882,391, Jan. 7, 1970, abandoned, which is a division of Ser. No. 741,492, Jul. 1, 1968, Pat. No. 3,530,557. This application Sep. 21, 1977, Ser. No. 835,329
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552243
Int. Cl.[2] D04H *1/26*
U.S. Cl. 28—110 **6 Claims**



1. Apparatus for the production of non-woven tubing comprising

a. a stationary mandrel, said mandrel being tapered toward a discharge end and having

b. a plurality of needle apertures upstream of said discharge end,

c. rotating and ejecting means for rotating a series of overlapping web turns about said mandrel,

d. needling means for fastening overlapping turns to each other to form a tube,

e. said rotating and ejecting means including at least one drive roller positioned to engage the periphery of said tube, and

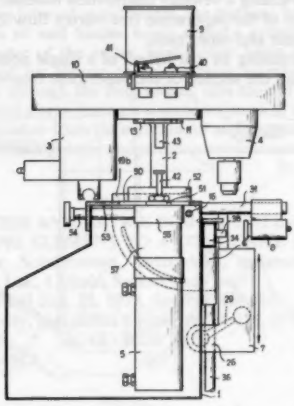
f. a helical surface on said mandrel substantially coaxial therewith and positioned in the zone in which the tube is engaged by said roller.

4,138,773

WOODWORK DRILLING AND SCREWING MACHINE

Henri Moatti, 107, Avenue de Saint-Mande, 75012 Paris, France

Filed Dec. 15, 1977, Ser. No. 860,727
Claims priority, application France, Dec. 22, 1976, 76 38703; May 17, 1977, 77 15095
Int. Cl.[2] B23B *39/00*; B27C *9/00, 3/00*
U.S. Cl. 29—26 R 10 Claims



1. Drilling and screwing machine intended more particularly for fitting door-hinge plates or like hardwares on pieces of joinery or similar elements, this machine comprising in the known fashion: a pivoting assembly consisting of a table supporting on one side a drilling head and on the other side a screwing head, an electric motor for rotatably driving said heads, a cylinder and piston unit of which the piston-rod supports said table, and means for retaining in position the piece of joinery which are secured to the front face of the machine base structure, said means consisting of a system comprising two tables adjustable, one about an horizontal axis and the other vertically, said machine being characterized in that it comprises on the other hand a box-shaped base structure (1) in which the main cylinder and piston unit (5) is enclosed with its piston-rod (2) extending vertically through an aperture (50) formed in the top (53) of said box-shaped base structure, means being also provided for moving and guiding the cylinder, piston-rod and table assembly through said aperture and locking said assembly in a preselected position, the tables associated with said base structure being so disposed that the first table (6) rotatably mounted on said base structure supports the second table (7) adapted to slide in relation thereto, said second table carrying the cylinder and piston units (8) provided for clamping the piece of joinery in position and holding it at the desired height and in the desired orientation.

4,138,774

PANEL POSITIONING APPARATUS

Tadao Oyama, Mobara, Japan, assignor to Hitachi, Ltd., Japan

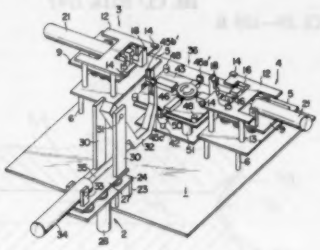
Filed Apr. 15, 1977, Ser. No. 787,842
Claims priority, application Japan, Jul. 28, 1976, 51-89099; Jul. 28, 1976, 51-89098; Aug. 11, 1976, 51-94897
Int. Cl.[2] H01J *9/06*
U.S. Cl. 29—25.19 17 Claims

1. Apparatus for positioning a panel by using, as a reference, a pair of panel pins attached to inner lateral surfaces of the panel, said lateral surfaces being in spaced justaposed positions, comprising:

support means having a substantially horizontal support surface for movably supporting said panel;

a plurality of positioning units corresponding in number and position to said panel pins, each of said positioning units comprising a positioning lever formed therein with a groove for guiding one of said panel pins to a predetermined position as said positioning lever is actuated while said panel is supported on said supported surface of said support means, and

panel holding means located between said positioning units, said panel holding means including a panel holding plate



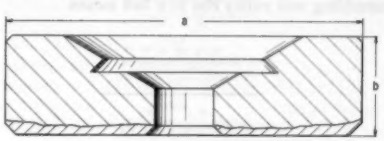
movable in a substantially vertical direction, means for moving said panel holding plate in a substantially vertical direction, upright positioning portions provided on said panel holding plate and each formed at an upper end thereof with a notch for receiving and supporting one of said panel pins.

4,138,775

METHOD FOR MANUFACTURING A SHOE FOR A SWASH-PLATE TYPE COMPRESSOR

Hikaru Takaoka, Kariya; Teruaki Inoshita, Toyota; Takashi Fukuda, Toyota, and Hitoshi Toga, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Taihou Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 13, 1977, Ser. No. 815,427
Claims priority, application Japan, Apr. 19, 1977, 52-044807
Int. Cl.[2] B23P *15/00*
U.S. Cl. 29—156.4 R 10 Claims



1. A method for manufacturing a shoe for a swash-plate type compressor comprising:

(a) forming an axially symmetrical concavity on one surface of a base material made of steel, the diameter of the concavity progressively decreasing from the opening portion of said concavity toward the bottom portion thereof, and forming at least one annular groove in said concavity;

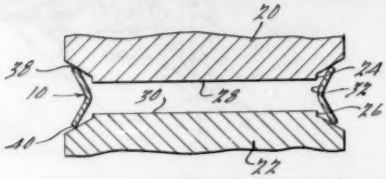
(b) concentrically placing, over said groove in said concavity, an annular ring-shaped material made of a metal selected from the group consisting of copper, copper alloys, aluminum, aluminum alloys, zinc, zinc alloys, and nickel; and

(c) pressing a substantially partiallyspherical projection into said concavity, causing a part of said annular material to fill said annular groove, and causing a part of the conductivity to become substantially spherical and causing the rest of the annular material to spread under pressure and cover that part of the concavity which is partially spherical.

4,138,776
METHOD FOR FABRICATING PULLEYS

William G. Oldford, Lexington, Mich., assignor to Huron Tool & Manufacturing Division of U.S. Industries, Inc., Lexington, Mich.

Filed Jul. 5, 1977, Ser. No. 813,165
Int. Cl.[2] B21K 1/42
U.S. Cl. 29—159 R 8 Claims



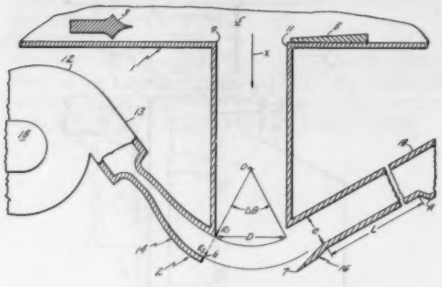
1. A method of fabricating a pulley comprising:
providing a pulley rim blank in the form of a cylindrical member of a predetermined length having a substantially constant diameter along said predetermined length;
providing axially opposed first and second die means, each of said die means being generally cylindrical and having an annular shoulder portion on an axially opposed end thereof;
positioning said rim blank between said axially opposed first and second die means, the interior surface of said rim blank being engaged by each of said annular shoulder portions to accurately locate said rim blank with respect to said die means;
moving at least one of said first and second die means toward the other die means so as to cause converging movement of axially opposed edge portions of said rim blank so as to form in a single forming step, a substantially finished pulley rim having an annular V-groove in the circumferential surface of said blank, and
assembling said pulley rim to a hub means.

4,138,777
SINGLE NOZZLE FREE-VORTEX AERODYNAMIC WINDOW

C. Edward Kepler, East Hartford, and Roy N. Guile, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 561,021, Mar. 21, 1975, Pat. No. 3,973,218. This application May 13, 1976, Ser. No. 685,946
Int. Cl.[2] H01S 3/22
U.S. Cl. 29—157 C 3 Claims

1. A method for forming the inner and outer flow forming contours of a single nozzle having an output of a section of supersonic free-vortex flow which can be placed across an opening between two regions of different pressure comprising the steps of,
(1) selecting an inner chord of a section of supersonic free-vortex flow desired to be formed,
(2) selecting a turning angle which bounds the section of supersonic free-vortex flow,
(3) selecting gas conditions of the gas from which the section of supersonic free-vortex flow is to be formed,
(4) determining an inside radius of the section of supersonic free-vortex flow from the relationship of the inner chord and turning angle,
(5) determining an outer radius of the section of supersonic free-vortex flow from the inner radius, the gas conditions, and the pressure of the two regions,
(6) determining a velocity distribution necessary to form the section of the supersonic free-vortex flow lying between the inner and outer radii,
(7) determining an exit kernel of a single nozzle flow field abutting the section of the supersonic free-vortex flow,

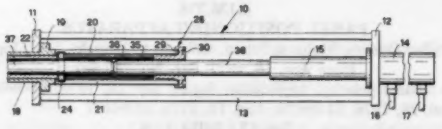


(8) determining nozzle contours by forming circular arc segments tangent to the inner and outer radii of the section of the supersonic free-vortex flow and determining the flow field bounded by these circular arc segments and the exit kernel, the determination is carried backward through the nozzle to a juncture with a single uniform flow nozzle having a Mach number of 1 or better so that the gas in passing forward through the nozzle contours exhibits the supersonic free-vortex properties at the single nozzle exit,
(9) fabricating a single nozzle having inner and outer flow forming contours by utilizing the above determined conditions.

4,138,778
METHOD AND APPARATUS FOR MOUNTING AND DISMANTLING THE RESILIENT LININGS OF PRESSURE ROLLERS EMPLOYED IN THE DRAWING-SYSTEMS OF MACHINES PREPARATORY TO SPINNING

Angelo Marzoli, Palazzolo S. Oglio (Brescia), Italy, assignor to F. lli Marzoli & C. S.p.A., Palazzolo S. Oglio (Brescia), Italy

Filed Nov. 28, 1977, Ser. No. 855,529
Claims priority, application Italy, Dec. 28, 1976, 30911 A/76
Int. Cl.[2] B23P 19/02
U.S. Cl. 29—235 3 Claims



1. An apparatus for mounting and dismantling resilient liners having a metallic supporting member, characterized by comprising a casing in which there are coaxially mounted and spaced apart from each other a tubular member having longitudinal slits terminated at either of its ends, and a piston and cylinder assembly the piston of which is adapted to be shifted in the direction of said end of the tubular member at which said slits are terminated, a first guiding bushing coaxially inserted in the other end of said tubular member, a second guiding bushing having an annular flange in the vicinity of either of its own

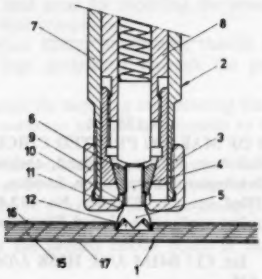
ends, said second bushing being insertable optionally by either of its ends coaxially into the end of the tubular member which confronts the piston and cylinder assembly, the difference between the inside diameter of the tubular member and the inside diameter of said guiding bushings being slightly greater than the thickness of the liner to be mounted or removed, whereas the inside diameter of the guiding bushings is substantially equal to the outside diameter of the roller on which the liner is to be mounted or from which it is to be removed, a collar carrying internal radial blades, the distance between the cutting edges of said blades being slightly greater that the outside diameter of the roller, such collar being capable of being mounted for sliding on said tubular member with its blades passed through the longitudinal slits thereof and being drivable by said piston through a spreader so as to slide along the tubular member from the end thereof at which said slits are terminated to the opposite end.

4,138,779

PROCESS AND DEVICE FOR MOUNTING A FASTENING ELEMENT TO A COMPOSITE PANEL

Alfred Weber, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 22, 1977, Ser. No. 808,783
Claims priority, application Switzerland, Jul. 6, 1976, 8626/76
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—432.1 **11 Claims**



1. In a process for mounting a fastening element onto a panel having an aperture, said fastening element including a shank having a head member of a cross-sectional area exceeding the cross-sectional area of said shank, and a shell member surrounding said shank, and terminating in a plurality of prongs the steps comprising:
clamping said shank of said fastening element;
inserting the head member of said fastening element at least partly into said aperture;
moving at least one member in a direction away from the other member;
expanding concurrently said prongs in a radially outward direction; and
engaging said panel with said prongs thereby mounting said fastening element onto said panel.

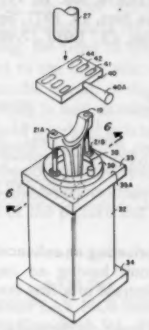
4,138,780

TOOL FOR REMOVING AND INSERTING BOLTS IN CONNECTING RODS

Adolf Jarmann, 23426 Summit Rd., Los Gatos, Calif. 95030

Filed Dec. 15, 1977, Ser. No. 860,864
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—525 **3 Claims**

1. The method of inserting bolts into a connecting rod having a wrist pin end and a crankshaft end wherein the crankshaft end includes machined surfaces and bolt holes therethrough by use of a power press having a ram which can be actuated towards a platen, comprising the steps of:
placing a hollow pedestal on the platen having a center opening of sufficient size to receive the connecting rod end and having surfaces positioned in alignment with the bolt holes of the connecting rod;
placing the bolts partially into the bolt holes;
positioning the connecting rod in the pedestal with the wrist pin end therof extending downward into the pedestal



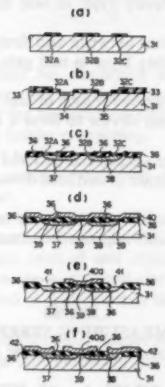
center opening and the bolts in contact with the pedestal surfaces and the machined surfaces facing upwards towards the ram; and
actuating the ram towards the platen to exert pressure on the machined surfaces to drive the connecting rod downward and force the bolts into the connecting rod bolt holes.

4,138,781

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Kazuo Niwa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 7, 1977, Ser. No. 757,572
Claims priority, application Japan, Jan. 10, 1976, 51-2354
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **8 Claims**

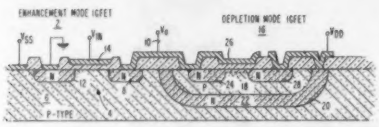


1. In a method for manufacturing a semiconductor device comprising selectively forming at least one function region of a semiconductor element in a position adjacent to one surface of a semiconductor substrate using a masking layer and forming an electrode metal layer on an electrode contact surface portion of said substrate adjacent to the function region, the improvement in which the position and size of the electrode contact portion is predetermined by subjecting the masking layer formed on the surface of the substrate to an initial patterning step to form at least one masking island, wherein the surface portion of the substrate contacting the masking island constitutes the electrode contact portion.

4,138,782
INVERTER WITH IMPROVED LOAD LINE CHARACTERISTIC

Francisco H. De la Moneda, Reston, and Harish N. Kotecha, Manassas, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 723,678, Sep. 16, 1976, Pat. No. 4,072,868. This application Nov. 15, 1977, Ser. No. 851,660
Int. Cl.[2] B01J 17/00
U.S. Cl. 29—571 4 Claims



1. A method for fabricating an enhancement/depletion mode IGFET inverter circuit having an improved load current characteristic in a substrate of a first conductivity type, comprising the steps of:

forming a masking layer on the surface of said substrate;

opening a window in said masking layer defining an area for the location of a depletion mode IGFET device;

anisotropically etching a flat bottom well through said window;

depositing and driving in a second conductivity type dopant to form a PN junction completely surrounding said well;

depositing a first conductivity type epitaxial layer to refill said well coplanar with the original substrate surface;

masking to define an area within the bounds of said well;

removing said masking layer outside the area of said well, defining a frame between the remaining masking layer on top of the refilled well and the edges of said window;

etching an isolation moat in said frame;

forming an insulating layer to fill said etched isolation moat;

diffusing a first source and drain regions of said second conductivity type in said refilled well forming a load device and a second source and drain regions of said second conductivity type in said substrate forming an active device;

defining gate regions between said first source and drain;

forming an insulating layer in said gate regions for the gate dielectric;

ion-implanting a channel region of said second conductivity type for said load device to form a depletion mode load device;

defining metal gate shapes and patterns connecting the gate, source and substrate of said load device to the drain of said active device;

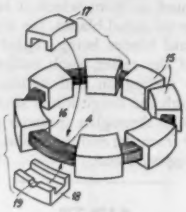
whereby an enhancement/depletion mode IGFET circuit configuration with improved current driving capabilities is formed.

4,138,783
METHOD FOR MEASURING STRESSES OR FORCES

Jean L. Portier, Paris, France, assignor to Soletanche, Paris, France

Division of Ser. No. 568,173, Apr. 15, 1975, Pat. No. 4,048,851, which is a continuation of Ser. No. 420,276, Nov. 29, 1973, abandoned. This application May 10, 1977, Ser. No. 795,659
Claims priority, application France, Oct. 9, 1973, 73 35986
Int. Cl.[2] H01F 41/00
U.S. Cl. 29—606 2 Claims

1. A method of manufacturing a cylindrical annular dynamometric receiver for measuring traction or compression stresses which are coaxial with the receiver, the receiver including a ferromagnetic core which generates a magneto-elastic effect when subjected to constraints or stresses and to an alternating magnetic field, and a single electric circuit acting as a variable impedance both with respect to resistance and inductance for detecting said effect, the core including a closed channel for housing said circuit, the closed channel constituting an active part of the circuit, and an additional channel adjacent said active channel, and the additional channel being of the same width and parallel to said active channel and located a distance away from said active channel less than said width for preventing traction stresses on the active channel, said core being non-laminated comprising the steps of milling components of

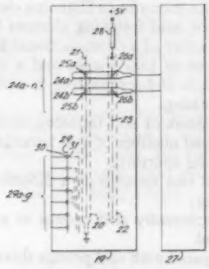


ferromagnetic material to provide sections of said core, drilling through each component to provide said closed channel, juxtaposing each component end-to-end to constitute a circular cylinder having a horizontal closed channel of circular cross-section, manually inserting said electric circuit into said closed channel, and mounting fastening means on said core for enabling said core to be subjected to traction stresses.

4,138,784
METHOD OF MAKING PRINTED CIRCUIT BOARD

Albert W. Nicholson, Clifton, England, assignor to National Research Development Corporation, London, England

Filed Apr. 29, 1977, Ser. No. 792,472
Claims priority, application United Kingdom, May 3, 1976, 17981/76
Int. Cl.[2] B41M 3/08; H05K 1/04
U.S. Cl. 29—625 5 Claims

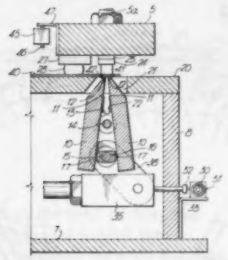


1. A method for producing a printed circuit on a board of insulating material to provide selective connection between conductive areas on one face of the board and conductive areas on the other face of the board, the board being pierced by a plurality of holes, each hole extending from a conductive area on said one face to a conductive area on the other face and each of the holes having initially a wall lining of conductive material effective to provide electrical connection between the respective conductive area on one face of the board and conductive area on the other face, the method comprising the step of removing the conductive lining material from individual holes to an extent effective to break the electrical connection provided by such lining between the associated conductive areas.

4,138,785
MACHINE FOR CLINCHING A MULTIPLE LEAD COMPONENT

Harold R. Dearborn, Belleville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 7, 1977, Ser. No. 848,882
Int. Cl.[2] H05K 3/32
U.S. Cl. 29—741 8 Claims



1. A clinching machine for fastening a connector to a printed circuit board in preparation for wave soldering the printed circuit board, said connector having an elongated row of terminal lugs extending therefrom and the circuit board having a plurality of land areas for receiving the terminal lugs, the clinching machine comprising:

a work surface having an opening therein for receiving terminal lugs protruding through the printed circuit board,

clamping means for engaging and retaining the circuit board and the connector in fixed relationship to the work surface,

clinching means including a clinching jaw having a tip portion defined by work faces intersecting at an inside angle of less than 90°, the clinching jaw being pivotably fixed relative the work surface so as to be closely adjacent the surface of the printed circuit board in the area of the opening,

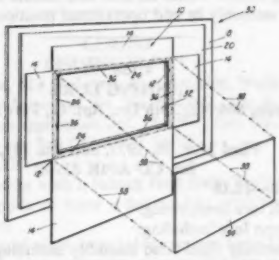
actuating means responsive to clamping actuation of the clamping means for causing the clinching jaw to rotate a predetermined amount,

whereby terminal lugs met by the clinching jaw are drawn into close and substantially parallel contact with the associated land areas.

4,138,786
PICTURE FRAME

Bertha M. Smith, c/o Windmill Gallery, 1900 West 13th St., Wichita, Kans. 67203

Filed Feb. 7, 1977, Ser. No. 766,609
Int. Cl.[2] G09F 1/10
U.S. Cl. 40—158 R 1 Claim



1. A picture frame for framing a picture therein, the frame comprising:

a picture matting having an opening therein for viewing the front of the picture; and

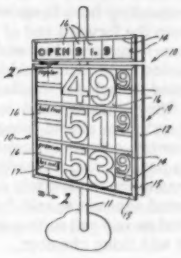
an envelope made of a chemically neutral fabric which is nonalkaline and nonacidic so that said envelope will not stain the picture when retained therein, said envelope having a front portion with foldable flaps extending outwardly therefrom, the front portion of said envelope having an opening substantially the same size as the opening in said matting, the front of the front portion of said envelope secured to the back side of said matting by an adhesive between the border of the opening in said matting and the opening in said envelope, the opening in the front portion of said envelope indexed with the opening in said matting;

the front portion of said envelope receiving the front of the picture thereon, the foldable flaps folded and disposed against the back of the picture and enclosing the picture therein.

4,138,787
DISPLAY HOLDER

Robert Sarkisian, 4276 Stoneleigh Rd., Bloomfield Hills, Mich. 48013, and David U. Hillstrom, Novi, Mich., assignors to Robert Sarkisian, Bloomfield Hills, Mich.

Filed Feb. 23, 1976, Ser. No. 660,702
Int. Cl.[2] G09F 7/02
U.S. Cl. 40—618 28 Claims



1. A display holder for displaying sign panels, said sign panels being held securely in place without permanent deformation and adapted for repeated use and reuse in said display holder, said display holder comprising

a substantially flat backing member,

at least one track member positioned on and secured to said backing member,

said track member having a pair of flanges thereon forming elongated channels between each of said flanges and said backing member, each of said channels having an inner end and an outer open end, said sign panels being receivable into selected of said channels through said open end thereof,

first rib means on each of said flanges adjacent the open ends of said channels and extending inwardly into said channels, and

second rib means on said backing member adjacent each of said channels, said second rib means extending inwardly into said channels and positioned in each of said channels between said first rib means and the channel inner end,

said first and second rib means extending inwardly into each of said channels such that said sign panels positioned in said channels and abutting against the respective rib means associated therewith are held tightly in tension in said channels without permanently deforming said sign panels, said first and second rib means automatically biasing the portion of the sign panels outwardly of each of said channels in a direction toward the plane of and into engagement with said backing member.

4,138,788

EXPLOSIVE POWDER OPERATED SETTING DEVICE

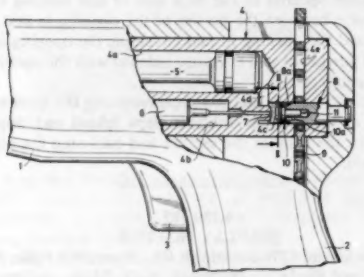
Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Feb. 27, 1978, Ser. No. 881,812

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2711070

Int. Cl.[2] B25C *1/14*

U.S. Cl. 42—1 R 9 Claims



1. An explosive powder operated device for setting fastening elements, such as bolts, studs and the like into a hard receiving material, comprising a housing, a barrel mounted in said housing and having a forward end and a rearward end, said barrel having an axially extending bore from which fastening elements are driven from the forward end of said barrel into the receiving material, a firing chamber within said barrel arranged to supply explosive gases into said bore, a counterhammer mounted in said barrel for feeding caseless powder charges into said firing chamber and said counterhammer forming one of the end faces of said firing chamber, wherein the improvement comprises that said counterhammer includes an axially extending body having an axially extending surface and an end surface extending transversely of the axially extending surface and located adjacent to said firing chamber, and a sealing ring supported on said end surface and located between the end surface and said firing chamber.

4,138,789

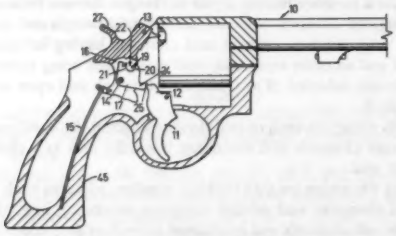
HAMMER TYPE IGNITION SYSTEM

Arthur W. Langsford, 306 Morish St., Broken Hill, New South Wales, Australia

Filed Jul. 7, 1977, Ser. No. 813,508

Int. Cl.[2] F41C *19/00*

U.S. Cl. 42—65 7 Claims



1. A hammer type ignition system for a firearm having a hammer pivot about a pivot pin, comprising a sear, a floating cam also pivoted about said pivot pin and pivotally movable relative to the hammer, a sear engaging surface on the cam releasably engageable by the sear of a firearm trigger, co-operable means on the hammer and cam comprising a pair of abutment faces on opposite sides of a recess in the cam, and a limit pin on the hammer, said limit pin being accommodated in said recess and movable from one position where it engages one of the abutment faces to a second position where it engages the other.

4,138,790

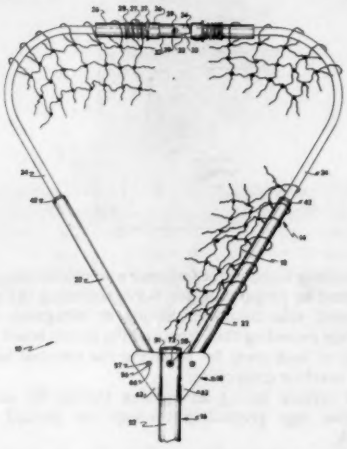
COLLAPSIBLE AND TELESCOPING FISHING NET

Wayne A. Schmucker, R.R. No. 2, West Unity, Ohio 43570

Filed Dec. 15, 1977, Ser. No. 860,885

Int. Cl.[2] A01K *77/00*

U.S. Cl. 43—12 15 Claims



1. A fishing net apparatus, comprising:

a telescoping and collapsing rim assembly, netting, a collapsible handle assembly, and a yoke assembly;

said rim assembly having two hollow shafts and two arcuate members, each said arcuate member telescoping in one of said hollow shafts, each said arcuate member attached to a spring latching means for securing said rim assembly in an operational position;

said two spring latching means attached together with a free rotational pivoting means for assembling said fishing net into said operational position;

said netting strung on said rim assembly;

said handle assembly having a spring release means for maintaining said handle assembly in said operational position;

said yoke assembly having a hollow central shaft through which said handle assembly may collapse;

said yoke assembly having wing means for engaging said rim assembly shafts, and pivot pins;

said wing means having apertures through which said pivot pins secure said rim assembly to said yoke assembly; and

said central shaft having an aperture through which said spring release means secures said handle assembly to said yoke assembly in said operational position.

4,138,791

FISHING LURE

Jay S. Anson, 604 NE. 29th Dr., Apt. C., Fort Lauderdale, Fla. 33334

Filed Mar. 28, 1977, Ser. No. 781,563

Int. Cl.[2] A01K *85/00*

U.S. Cl. 43—42.15 4 Claims

1. A fish lure comprising:

a bug type lure including;

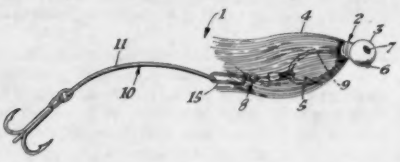
a substantially rigid head assembly including,

a head portion,

eyelet means affixed to the front end of said head portion for connecting the end of a fishing line,

a rear body portion consisting of a plurality of thin members,

a hook portion connected to the rear of said head portion providing,
an image of a buglike creature,
a flat baitlike fish lure including,
a head portion,
a body portion connected to said head portion,
a tail portion connected to said body portion,



eyelet connected to the head portion, and
a hook connected to said baitfish lure,
a swivel means connected between said bug type lure and said baitfish lure said swivel means connected to saidhook portion of said bug-type lure and to said eyelet of said baitfish lure.

4,138,792

ARTIFICIAL SNAKE-EEL BODY

Loren G. Hill, Norman, Okla., assignor to Norman Manufacturing Co., Inc., Greenwood, Ark.

Filed Oct. 17, 1977, Ser. No. 843,071
Int. Cl.[2] A01K *85/00*; A63H *3/00*
U.S. Cl. 43—42.24 **4 Claims**

1. An elongated artificial snake-eel body, for use as a fishing lure, said body comprising an elongated strip member of multiconvolution spiral configuration decreasing in radius of curvature from one end thereon toward the other end, said strip including opposite side longitudinal edges and being of greater transverse width than thickness and including a generally endwise outwardly projecting terminal end on said one end thereof, said body being constructed of resilient, shape retentive but flexible material, one longitudinal edge of said strip member comprising the inner periphery of said spiral and the other longitudinal edge of said strip member comprising the outer periphery of said spiral, said strip member tapering in thickness from said other edge thereof toward said one edge thereof.

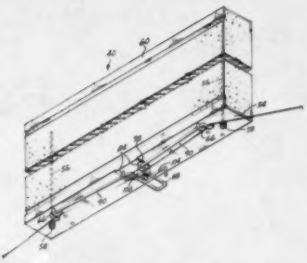
4,138,793

FISHING FLOAT

William J. Kellie, 418 N. Lewis, Port Angeles, Wash. 98362

Continuation-in-part of Ser. No. 674,907, Apr. 8, 1976, abandoned. This application Jul. 13, 1977, Ser. No. 815,210
Int. Cl.[2] A01K *91/00*
U.S. Cl. 43—43.13 **14 Claims**

1. In combination with a fishing float body having a height and length to guide or steer a fishing line with fishing gear attached thereon;
(a) a bottom surface plate detachably secured to said float, said bottom plate having a plurality of pairs of holes in each end portion of said bottom plate, said pairs of holes spaced laterally across the width of said bottom plate;
(b) an end hook member receivable by a first hole of a selected pair of holes in each end portion of said bottom plate for detachable connection thereto;
(c) an elongate, flexible rod connected to said bottom plate by said two end hook members for permitting partial rotation of said rod about its longitudinal axis, the alignment of said rod with respect to said bottom plate being determined by the selection of pairs of holes in each end portion of said bottom plate for detachably connecting said end hook members thereto, said rod including:
(1) a main body portion having an integral; U-shaped handle portion extending transversely of the length of said rod, and
(2) line engaging curved end portions receivable in a second hole of each of said selected pair of mounting holes;



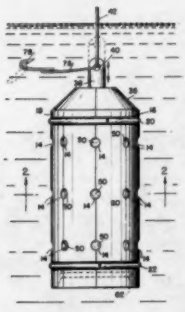
(d) a central mounting plate detachably connected to said bottom plate;
(e) a plurality of central hook members engageable with holes provided in said central mounting plate for detachably connecting said central hook members to said bottom plate, said central hook members cooperating with said end hook members to pivotally connect said rod to said bottom plate; and
(f) latch means carried by said central mounting plate, said latch means being cooperatively engageable with said rod handle to maintain said rod in fishing line retaining position, and disengageable from said rod handle to permit said rod to rotate to fishing line receiving position.

4,138,794

COMBINATION SINKER AND BAIT JUICE DISPENSER

Fernando Chiodini, Brooklyn, N.Y., assignor to Fenco Corporation, Long Island City, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,144
Int. Cl.[2] A01K *95/00, 97/00*
U.S. Cl. 43—43.14 **5 Claims**



1. A combination sinker and bait juice dispenser comprising a hollow housing having at least one fluid outlet aperture therein and including an open lower portion having an internal groove, a resilient sponge member disposed within said hollow housing, plunger means for alternately compressing and releas-

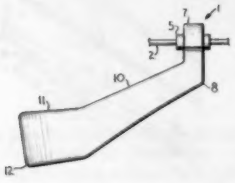
ing said sponge member for charging said sponge member with a charge of bait juice, attachment means for connecting a fishing line to said plunger means, and a plurality of extension weights releasably attachable to said hollow housing for removably adding weight to said device, said plurality of extension weights each including an extension portion having a projecting bead removably engaging the internal groove of said hosing lower portion for attachment of said extension weight to said housing.

4,138,795

SLIDING SINKER

Glen R. Welle, Minden, La., assignor to Mister Twister, Inc., Minden, La.

Filed Apr. 25, 1977, Ser. No. 790,403
Int. Cl.[2] A01K *95/00*
U.S. Cl. 43—44.89 **5 Claims**



1. A sliding sinker combination for attachment to a fishing line comprising:

(a) an integral sinker body member of formable weight material having an ear extending from one end thereof and defining an obtuse angle between said ear and body member;

(b) said ear having an aperture therethrough with a narrow opening extending transversely through one side thereof communicating with said aperture;

(c) a tubular member positioned in said ear aperture and coaxial thereof, said ear being formed to grip the tubular member to retain same therein with the narrow opening being substantially less than the diameter of the tubular member, said tubular member slidably receiving a fishing line therein whereby the sinker is movable along the fishing line.

4,138,796

REPEATING ANIMAL TRAP ASSEMBLY

Anthony J. Souza, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Mar. 31, 1977, Ser. No. 783,318
Int. Cl.[2] A01M *23/02*
U.S. Cl. 43—61 **22 Claims**

1. A repeating animal trap assembly comprising:

(a) a capture unit means;

(b) a holding unit means; and

(c) means associating said capture unit means with said holding unit means;

said capture unit means including:

(i) capture unit housing means comprising portions defining a capture unit compartment having at least one capture unit entry opening and a capture unit exit opening;

(ii) capture unit entry door means for each capture unit entry opening;

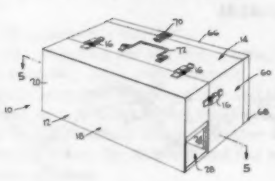
(iii) capture unit exit door means for said capture unit exit opening;

(iv) means supporting each capture unit entry door means for movement between an opened position in which its associated capture unit entry opening is unblocked to permit entry of an animal into said capture unit compartment therethrough, and a closed position in which said capture unit entry opening is blocked by said capture unit door means;

(v) means supporting said capture unit exit door means for movement between a closed position in which said capture unit exit opening is blocked by said capture unit exit door means to preclude re-entry of an animal into said capture unit compartment therethrough, and an opened position in which said capture unit exit opening is unblocked;

(vi) actuating means operatively associated with said capture unit entry and exit door means to move said door means between their respective opened and closed positions, said capture unit entry door means being in its opened position when said capture unit exit door means is in its closed position, and said capture unit entry door means being in its closed position when said capture unit exit door means is in its opened position;

(vii) power means operatively associated with said actuating means to cause said actuating means to move said capture unit entry and exit door means between their respective positions;



(viii) passageway means defining a passageway having one end communicating with said capture unit compartment through said capture unit exit opening, said passageway means extending outwardly from said capture unit compartment; and

(ix) first and second independently operable trigger means operatively associated with said power means and first and second operating means for said first and second trigger means respectively, said first operating means being located within said capture unit compartment to cause said first trigger means to initiate said power means to cause said actuating means to move said capture unit entry door means to its closed position and to move said capture unit exit door means to its opened position when an animal is fully within said capture unit compartment, thereby precluding escape of an animal from said capture unit compartment except through said capture unit exit opening, and said second operating means being located within said passageway at a distance from said capture unit exit opening to cause said second trigger means to initiate said power means to cause said actuating means to move said capture unit entry door means to its opened position and to move said capture unit exit door means to its closed position after an animal has passed through said capture unit exit opening, thereby precluding re-entry of an animal to said capture unit compartment therethrough, while permitting an additional animal to enter said capture unit compartment through a capture unit entry opening;

said holding unit means including:

(i) holding unit housing means comprising portions defining a holding unit compartment having a holding unit entry opening,

said means associating said capture unit means with said holding unit means aligning said units such that said capture unit compartment communicates with said holding unit compartment by said passageway means passing through said holding unit entry opening.

4,138,797

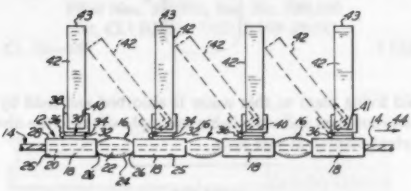
SEQUENTIAL MULTIPLE TOPPLING PULL TOY

Eugene R. Stolar, 302 Anzio Dr., Duncanville, Tex. 75116

Filed Jul. 13, 1977, Ser. No. 815,289

Int. Cl.² A63H *33/00*

U.S. Cl. 46—1 R **8 Claims**



1. A sequential multiple toppling pull toy, comprising

an elongated flexible traction element,

a multiplicity of toppling member carriers disposed in spaced relationship to one another along said traction element,

a multiplicity of spacers disposed along said traction element in the spaces between said carriers,

said carriers and said spacers and said flexible traction element being arranged in an elongated flexible train with the opposite ends of said spacers relatively swingably engaging said carriers adjacent said opposite ends of said carriers,

a toppling member holder including a hinge pivotally mounted upon each carrier for toppling motion between an upright position and a backwardly-tilted toppled position,

said toppling member holder being adapted to hold an elongated upright toppling member,

said holders being spaced apart from one another at horizontal intervals less than the heights of said toppling members when in their upright positions,

whereby the toppling backward of the leading toppling member successively and sequentially effects backward toppling of the following toppling members.

4,138,798

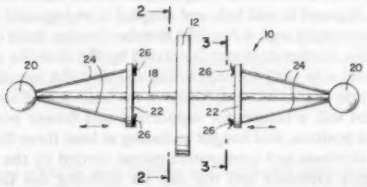
ROTATING TOY

Joseph Washington, 11806 S. Watkins, Chicago, Ill. 60643

Filed Mar. 17, 1977, Ser. No. 778,562

Int. Cl.² A63H *1/32*

U.S. Cl. 46—59 **5 Claims**



1. A toy comprising a shaft, a rotor fixed to, and on said shaft intermediate the ends of said shaft, first and second elongate handle members, each handle member having a bore therethrough transverse to the elongate axis of said handle member and intermediate the ends of said handle member, each handle member being received on said shaft on one side of said rotor, a portion of said shaft on one side of said rotor being received through said bore of one of said handle members, the diameter of each said bore being larger than said shaft to permit slidable and rotatable movement of said shaft relative to said handle member, first and second end caps each mounted on one end of said shaft to maintain one of said handle members on one portion of said shaft between said rotor and one end of said shaft, two pairs of strings, each pair being connected at one end to one end of one of said handle members and at the other end to said shaft and including a first string attached at one end to one portion of one of said handle members on one side of said bore at a point spaced from said bore therein and a second string attached at one end to the other portion of said one of said handle members on the other side of said bore therein at a point spaced from said bore and each of said handle members, in the vicinity of said bore therein, being sized and configured so as to be gripped easily by a child's hand and so that, when gripped, said rotor can be rotated to twist said strings and then, continuous reciprocal rotating movement of said rotor and shaft can be achieved by moving said handle members axially of said shaft toward and away from each other.

4,138,799

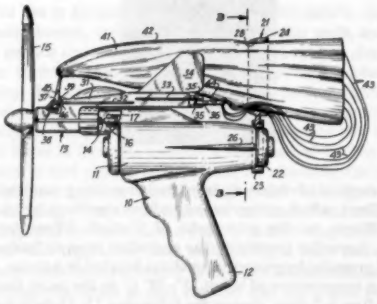
TOY PLANE WITH PARACHUTE AND LAUNCHER

Calvin S. Cook, and Carl J. Merl, both of Erie, Pa., assignors to Louis Marx & Co., Inc., Stamford, Conn.

Filed Jan. 19, 1977, Ser. No. 760,615

Int. Cl.² A63H *33/20*

U.S. Cl. 46—86 R **12 Claims**



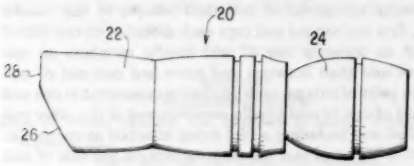
1. In a combination with a launcher and a flying vehicle adapted to be launched into the air by the launcher, said flying vehicle having a body, the improvement comprising a parachute having a canopy, shroud lines and means for connecting said canopy to said body through said shroud lines at a first shroud connecting position, a parachute support member carried by said launcher and parachute pulling means acting between said canopy and said body for releasably connecting said canopy to said body at a second parachute pulling position during a first portion of vehicle flight whereby said canopy may be pulled in a closed mode during travel of said vehicle from launching to the apogee of its flight and said parachute pulling means is released as said flying vehicle descends with said canopy opened and connected to said flying vehicle only at said first position.

4,138,800

DUCK CALL

Ricky Lege, Rte. 4, Box 92-D, Abbeville, La. 70510

Filed Apr. 20, 1977, Ser. No. 789,286
Int. Cl.² A63H *1/28*
U.S. Cl. 46—180 **9 Claims**



1. A bird call comprising a mouthpiece with a central aperture, said mouthpiece having a slanted blowing end whereby a caller may hold the bird call in a vertical downward direction during use with minimum downward deflection of the caller's head, a soundbox with a central aperture joined to said mouthpiece, said soundbox supporting a tongue and vibrating reed which projects into said mouthpiece, said tongue including a groove which flares outwardly in a direction away from said mouthpiece.

4,138,801

METHOD OF PROPAGATING SELECTED FILBERT VARIETIES

Georgi S. Anadoliev, Kardjali, Bulgaria, assignor to Glavno Upravlenie Rastenievadstvo pri MZHP, Sofia, Bulgaria

Continuation-in-part of Ser. No. 651,411, Jan. 22, 1976, abandoned. This application Dec. 7, 1976, Ser. No. 748,384
Int. Cl.² A01G *1/00*
U.S. Cl. 47—58 **3 Claims**

1. A method of obtaining engrafted engrafting material from giant filbert, which comprises engrafting seedlings or scions of giant filberts on the rootstocks of Turkish filbert trees or bushes, thereafter stratifying the engrafted trees or bushes in a neutral granular hygroscopic medium located in a room, maintaining a temperature of about 35°–38° C. in the room throughout the first 6–7 days, during the following 15–18 days holding the temperature at about 25°–28° C., throughout the entire above period holding the relative room air humidity at about 70–75%, and just before taking the material out of the room holding the temperature of the room for several days at about 16°–18° C.

4,138,802

METHOD OF GROWING PLANTS IN THE ROOTS OF A LIVE OSMUNDA FERN

Hassel L. Weisner, 118 W. Primrose, P.O. Box 765, La Feria, Tex. 78559

Filed Nov. 21, 1977, Ser. No. 853,742
Int. Cl.² A01G *1/00*
U.S. Cl. 47—58 **7 Claims**

1. A method for growing plants comprising forming at least one hole in the fibrous root mass of a living fern plant which is capable of absorbing and holding water and plant nutrients, planting a diverse live plant in said hole formed in said root mass and periodically pouring water onto the fibrous root mass

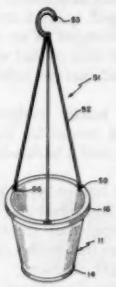
of said living plant so that water is absorbed and held by the fibrous root mass and is available to supply water to the diverse live plant planted in said hole.

4,138,803

FLOWER POT CONSTRUCTION

Hugh P. Sherlock, Palo Alto, Calif., assignor to M.U. Engineering & Manufacturing Inc., Mountain View, Calif.

Filed Apr. 6, 1977, Ser. No. 785,314
Int. Cl.² A01G *27/00*
U.S. Cl. 47—67 **2 Claims**



1. In a flower pot construction, a container formed of plastic, said container having a bottom wall and an outwardly extending generally frusto-conical side wall formed integral with the bottom wall, a rim formed integral with the upper extremity of the side wall and being substantially in the form of an inverted U defining an annular recess underlying the rim, said bottom wall having a hole therein and being formed with a downwardly extending frusto-conical lip extending downwardly from said hole, a removable plug formed with a frusto-conical side wall disposed in said hole and adapted to engage said lip to form a water-tight seal, a disc-like member having drain openings therein, cooperative means carried by the disc-like member and said side wall for supporting the disc-like member in the container so that it is spaced above the bottom wall and can carry plant soil, a hanger for supporting said flower pot in a suspended position, said hanger including at least three flexible elongate elements and cooperative means carried by the flexible elongate elements and the rim for securing the flexible elongate elements to the rim to support the container, said cooperative means including spaced apart slots formed in the rim and extending downwardly into said side wall, mallet-like members carried by said elongate elements inserted through

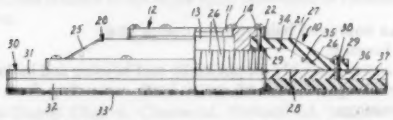
said slots and having portions thereof engaging the underside of said rim to support said container from said hanger, fins carried by said elongate elements overlying said mallet-like members and engaging the upper side of said rim to retain said mallet-like members in engagement with said rim, and a wick carried by said disc-like member and adapted to extend into water carried by the container and into the soil carried by the disc-like member, said plate having a slot therein opening into one of said drain openings to form a keyhole opening, said wick being retained in said slot.

4,138,804

MACHINE HEAD ASSEMBLY AND TORQUE-TRANSMITTING DEVICE INCORPORATED IN THE SAME

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 5, 1976, Ser. No. 739,150
Int. Cl.[2] B24D *17/00*; B24B *23/00*
U.S. Cl. 51—168 **7 Claims**



1. A machine head assembly especially useful with a rotary floor surface treating machine, comprising, in combination:

attachment means for connecting said assembly to the drive shaft of a floor surface treating machine;

firmly attached to said attachment means, a relatively firm, flexible annular torque-transmitting member comprising a hollow open-ended body having an inner ring at its top end having a portion thereof adapted for attachment to said attachment means, an external flange axially spaced from said ring at its bottom end, and a multiplicity of spaced flexible support ribs each depending from and integral with the inner surface of said ring, with the bottom edges of said ribs being located approximately in the plane defined by the bottom surface of said external flange, the material forming relatively firm, said flexible torque-transmitting member have a Shore A durometer hardness from about 50 to about 90; and

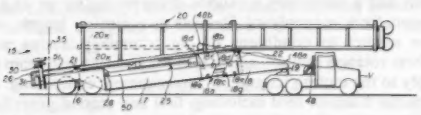
firmly attached to said bottom surface of said external flange of said torque-transmitting member, rotatable means for engaging a floor surface treating article.

4,138,805

WHEELED PORTABLE TRAILER SUBSTRUCTURE FOR ELEVATABLE DRAWWORKS, MASTS AND SETBACK TOWER

Bradley C. Patterson, Houston, Tex., assignor to Pyramid Manufacturing Company, Houston, Tex.

Filed Oct. 17, 1977, Ser. No. 842,476
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—118 **4 Claims**



1. In a portable well drilling and workover apparatus including a mast, drawworks and setback structure which may be raised to provide an elevated working floor for conducting well operations the invention comprising:

a. first trailer means;

b. second trailer means;

c. means for positioning said first and second trailer means together to form a base substructure support for the apparatus;

d. means pivotally connecting the mast and setback structure on said first trailer means whereby they may be transported in reclined position and then elevated when desired;

e. support means pivotally supporting said drawworks on said second trailer means;

f. sheave means on said mast for receiving a line thereover secured at one end to said setback structure resting on said first trailer means and connected with power means at its other end to first elevate said setback structure; and

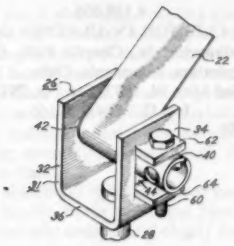
g. means to secure said setback structure in elevated position on said first trailer means.

4,138,806

ANCHORING DEVICE FOR VEHICLES AND OTHER STRUCTURES

Milton J. Miller, Goshen, Ind., assignor to MHA Corporation, Goshen, Ind. and Aluminum Plumbing Fixture Corp., Burlingame, Calif.

Filed Dec. 12, 1977, Ser. No. 859,840
Int. Cl.[2] E04H *12/20*
U.S. Cl. 52—149 **10 Claims**



1. For use in an anchor system adapted for mobile, modular and motor homes, trailers, campers and similar units, and having an anchor for attachment to the ground, and an elongated flexible member extending upwardly from said anchor and engaging the structure of said units: an anchor device for tensioning and adjusting said flexible member, comprising a generally U-shaped body attached to said anchor and having aligned holes in the arms thereof, a reel shaft of tubular shape journaled in said aligned holes, means for attaching one end of said elongated member to said reel shaft for winding thereon, means defining a transverse hole near one end of said reel shaft, a lug disposed on the external side of said U-shaped member adjacent said transverse hole and having a hole therein for alignment with said transverse hole, a pin-like member extending through the holes in said lug and reel shaft, and slot-like means extending inwardly from the other end of said reel shaft and having an open end and a laterally off-set portion for releasably retaining an operating tool in engagement with said reel shaft.

4,138,807

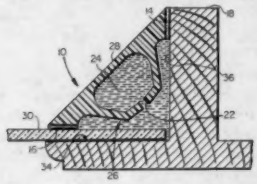
GLAZING STRIP AND METHOD

Martin Trachtenburg, 14 Candlewood La., Avon, Conn. 06001, and Robert H. Sand, 20 Trailsend Dr., Canton, Conn. 06019

Filed Mar. 30, 1978, Ser. No. 891,908
Int. Cl.[2] E06B *3/56*
U.S. Cl. 52—309.3 **8 Claims**

1. A glazing strip for window sash, comprising an extruded thermoplastic carrier member having longitudinally extending lands oriented at right angles to one another and located adjacent the marginal edges thereof, pressure sensitive adhesive

applied to said lands, said carrier defining a longitudinally extending central cavity with inner and outer walls having such thickness that they are flexible, glazing compound contained in said cavity, said inner cavity wall defining opening



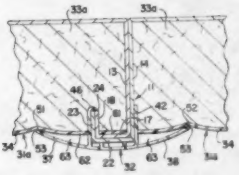
means for said glazing compound, and said inner cavity wall extending between said lands and adapted to cooperate with the window sash to define a generally L-shaped space into which space some of said glazing compound can be urged by external mechanical pressure applied to said outer cavity wall.

4,138,808

RETAINER CLIP FOR INSULATION OR THE LIKE

Zigmunt J. Walkiewicz, Jr., Chagrin Falls, Ohio, assignor to Heleron Corporation, Macedonia, Ohio

Filed May 18, 1977, Ser. No. 797,999
Int. Cl.[2] E04D *3/366*
U.S. Cl. 52—459 **14 Claims**



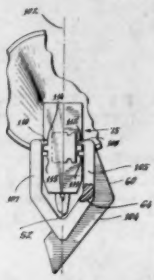
1. A metal building having wall panels connected by a "J" lock, a pair of insulation blankets positioned against said panels along opposite sides of said "J" lock, said blankets including a glass fiber body which tends to assume an unstressed shape having a predetermined thickness and which is resiliently compressible from said thickness, a vapor barrier facing laminated on said glass fiber body on the side thereof remote from said panels, a retainer strip formed of an extruded body of elastically deformable material, said strip including a curved cap portion adjacent to the side of said blankets remote from said wall panels providing oppositely extending curved flanges terminating at edges which resiliently grip said facing of a blanket along gripping lines spaced from the edge thereof causing compression of said glass fiber body beneath said gripping line while providing substantially less gripping of such blanket between said gripping line and its edge, said retainer strip being mounted on said "J" lock along a zone spaced from and between said edges of said cap portion and extending substantially continuously the entire length thereof, the portions of each blanket between its gripping line and its edge resisting lateral movement of said edge from under said retainer strip, said cap portion providing an imperforate cover completely bridging across the joint between adjacent facings, enclosing the joint between adjacent blankets and also enclosing the associated "J" lock and the mounting of said retainer strip thereon.

4,138,809

HAIR TRIMMER

Antonio Pires, Wallingford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed Aug. 17, 1977, Ser. No. 825,335
Int. Cl.[2] B26B *19/20*
U.S. Cl. 30—200 **7 Claims**



1. An improved hair trimmer comprising:
a. a housing;
b. a cutter assembly supported by said housing and including an elongated row of cutter teeth, extending from said housing;
c. an elongated comb body positioned on said housing laterally spaced from said row of cutter teeth and longitudinally aligned therewith;
d. a plurality of spaced apart rectilinear rib-like comb teeth depending from said comb body slanted in a direction transverse of said row of cutter teeth, said comb teeth adapted to form a bed of hair in the spaces between the comb teeth when the trimmer is advanced along hair to be trimmed;
e. a surface formed on said comb body for applying a force to hair strands of said bed of hair, said force applying surface spanning the space between adjacent comb teeth and adapted to apply a force to said hair strands upon said advance of the trimmer causing deflection of distal segments of the hair strands in a path of travel away from said bed of hair in a direction towards and transversely of said row of cutter teeth, and
f. said row of cutter teeth being spaced relative to said force applying surface in the path of travel of said distal segments for engaging and shearing said distal segments, said relative spacing providing that a majority of sheared distal segments have substantially the same length

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4,138,810

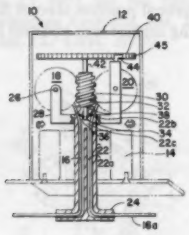
TORSIONAL VIBRATION FILAMENT FEED SYSTEM

Charles B. Pittinger, Sr., Rte. 1, Box 68, Weatherford, Tex. 76086, and Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136

Filed Apr. 20, 1977, Ser. No. 789,205
Int. Cl.[2] A01D *35/26*; A01G *3/06*
U.S. Cl. 30—276 **10 Claims**

1. In an incremental feed for filament in a filament trimmer which has a uniformly rotatable drive swinging an end of filament from a supply of filament as a cutting length, said drive subject to conditions during trimming causing non-uniform rotation thereof, and means for filament feed from the supply to the cutting length, the improvement comprising: the means for filament feed including: first and second gears having interconnection, the supply having association with the second gear for releasing filament from the supply upon a rotation of the second gear, the first gear having a mounting rotatable relative to the drive in a direction causing said rotation of the second gear, means for causing rotation of the first gear in said direction relative to the drive upon non-uniform rotation of the drive, including an inertia member having

connection with the first gear for overrunning the drive; and means for restricting filament feed from the supply during uniform rotation of the drive, comprising said interconnection of the first and second gears having mechanical advantage



preventing filament from drawing from the supply toward the cutting length and said means for restricting further including means for preventing rotation of the first gear counter to said direction relative to the drive upon non-uniform rotation of the drive.

4,138,811

SHAVING FOIL

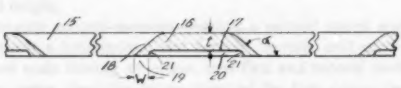
Jean-Daniel Chauvy, Chaumont, Switzerland, assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 699,041, Jun. 23, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,413

Claims priority, application United Kingdom, Jul. 5, 1975, 28415/75

Int. Cl.[2] B26B *19/02*

U.S. Cl. 30—346.51 **10 Claims**



1. A shearing foil for a dry shaver, made from a sheet of single metal, having perforations extending through the sheet with bars between the perforations, the bars being etched to provide the bars with a dished transverse cross-sectional profile having inside and outside edges and a substantially flat recessed base of substantially uniform thickness (t) merging with said inside edges, the dished profile having all of said inside and outside edges and said base being exposed and said exposed outside edges adjacent to the perforations linearly extending at an obtuse angle α to a base to terminate with substantially coplanar faces disposed substantially parallel to the base, said faces having a width (w) in the transverse direction which is not greater than the thickness (t).

4,138,812

VIBRATION ISOLATION SYSTEM FOR CHAIN SAW STRUCTURES

John L. Zimmerer, Torrance, and John H. Brooks, Encino, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Oct. 14, 1977, Ser. No. 842,061

Int. Cl.[2] B27B *17/02*

U.S. Cl. 30—381 **10 Claims**

10. In a chain saw comprising

a vibration generating assembly including

engine means,

guide bar means extending generally longitudinally from one side portion of said chain saw,

cutter chain means mounted on the periphery of said guide bar means for movement thereabout, and

drive means operable to drivingly couple said engine means to said cutter chain means; and

handle means supporting said vibration generating assembly;

the improvement in said handle means comprising:

a shock absorbing, unitized structural foam handle including

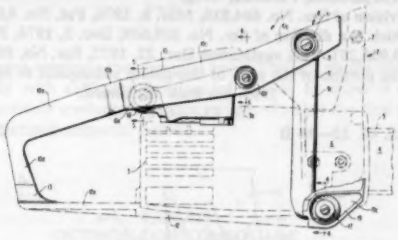
a rigid, closed cell, cellular resin core,

fibrous elements reinforcing said resin core, and

a solid resin skin substantially surrounding said cellular resin core;

said structural foam handle being energy absorbing; and

resilient, shock absorbing coupling means operable to connect said structural foam handle with said vibration generating assembly;



said resilient, shock absorbing, coupling means comprising

first and second vibration isolating assemblies mutually spaced longitudinally of said chain saw and cooperating with said handle means to define a relatively soft, resilient suspension for said vibration generating assembly;

said resilient suspension providing a relatively soft, elastic, vibration isolating means interconnecting said vibration generating assembly and said shock absorbing, structural foam handle,

said shock absorbing, structural foam handle comprising unitized handle means providing hand engaging portions at opposite ends of said engine means.

4,138,813

GUIDE BAR FOR CHAIN SAW

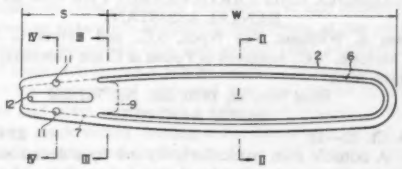
Tatsuzo Harada, Chofu, and Torao Kobayashi, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 879,978

Claims priority, application Japan, Apr. 1, 1977, 52-39327[U]

Int. Cl.[2] B27B *17/02*

U.S. Cl. 30—387 **1 Claim**



1. A guide bar for a chain saw comprising:

a pair of small thickness plates bonded together to provide the guide bar divided into a working portion and an attaching portion for attaching the guide bar to a chain saw main body;

a groove formed in said working portion by means of a press on an upper surface of each of said small thickness plates and extending in its marginal portion substantially parallel to its edge;

a chain guide groove located in a peripheral portion of the guide bar and defined by the marginal portions of the small thickness plates, said chain guide groove being formed by arranging the two small thickness plates back to back at bulging bottoms of the grooves serving as

abutting surfaces and bonding them together at the abutting surfaces; and

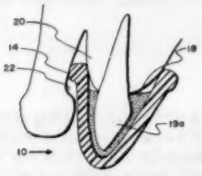
a sandwiched plate inserted and held between said small thickness plates in said attaching portion of the guide plate, said sandwiched plate having a thickness corresponding to the width of said chain guide groove.

4,138,814

DISPOSABLE DENTAL TRAY FOR TOPICAL APPLICATION OF FLUORIDE GEL AND OTHER DENTAL MEDICATIONS

Stewart Weitzman, Portland, Oreg., assignor to Pacemaker Corporation, Portland, Oreg.

Division of Ser. No. 664,818, Mar. 8, 1976, Pat. No. 4,064,628, which is a division of Ser. No. 529,609, Dec. 5, 1974, Pat. No. 3,955,281. This application Dec. 22, 1977, Ser. No. 863,216
The portion of the term of this patent subsequent to May 11, 1993, has been disclaimed.
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 B **2 Claims**



1. A disposable applicator tray for topical application of fluoride gel and other dental medications to the teeth, said tray consisting essentially of an arcuate unitary member molded from flexible, non-hydrotropic, fine-cell polymeric foam material and having bottom and wall surfaces forming a channeled interior recess of generally U-shaped cross-section configured to fit over either of the upper or lower teeth of the mouth, the perimeter of said tray wall being provided with a thickened flange portion, whereby a comfortable, non-gagging fit of the tray inside the mouth is obtained with said flanged perimeter of the walls of the tray being flexed by the bite of the mouth to contact the adjacent periodontal tissue to thereby provide a snug seal therewith and prevent the contamination and dilution by saliva of medication contained in said tray.

4,138,815

CONSOLE UNIT PARTICULARLY FOR USE BY A DENTAL ASSISTANT

James A. Williams, Van Wyck, S.C., and Arthur L. Jones, Charlotte, N.C., assignors to Pelton & Crane Company, Charlotte, N.C.

Filed Nov. 12, 1976, Ser. No. 741,366
Int. Cl.[2] A61C *19/02*
U.S. Cl. 32—22 **22 Claims**

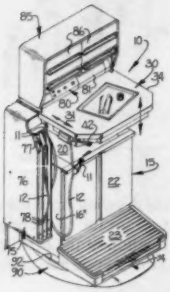
1. A console unit, particularly for use by a dental assistant adapted to carry powered handpiece instruments and to provide shelf, drawer, cabinet or the like storage space for miscellaneous hand tools, supplies and the like and working space utilized during the treating of a patient, and being characterized by a mobile independently adjustable construction for easy access thereto, said console unit comprising:

a main cabinet portion for containing support apparatus for the powered handpiece instruments and for providing storage space;

an upper work surface portion separately vertically and horizontally movably carried by said main cabinent portion and having an upper generally flat working surface area thereon;

a powered handpiece instrument storage compartment secured to and suspended from one side of said upper work surface portion for movement therewith and for removably carrying a plurality of the powered handpiece instruments and attached operating flexible hose for easy removal and use;

means mounting said upper working surface area for independent horizontal forward and return movement regardless of the vertical position thereof for positioning of said upper working surface area and said handpiece instrument



storage compartment in desired proximity to a user positioned in front of said console unit; and

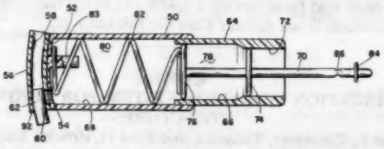
separate means mounting said upper work surface portion on said main cabinet portion for independent vertical upward and return movement of said upper work surface portion and said handpiece instument storage compartment regardless of the horizontal position thereof for positioning thereof at a desired elevation for easy access by the user.

4,138,816

COMBINED AMALGAM CARRIER AND DENTAL HANDPIECE

Fuller Warden, and Eugene W. Lewis, both of Tulsa, Okla., assignors to Grace Development Company, Tulsa, Okla.

Continuation of Ser. No. 508,256, Sep. 23, 1974, Pat. No. 3,965,578. This application Mar. 18, 1976, Ser. No. 668,196
The portion of the term of this patent subsequent to Feb. 13, 1990, has been disclaimed.
Int. Cl.[2] A61C *5/04*
U.S. Cl. 32—60 **8 Claims**



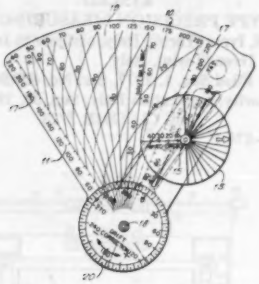
1. Cartridge means comprising a housing, mixing means disposed within said housing, sealing means carried by said mixing means and selectively engagable with a portion of said housing to provide at least two sealed chambers therein for storing quantities of ingredients preloaded therein, said mixing means operable for selectively combining and mixing said ingredients to produce an amalgam, a transverse passageway provided on the housing and being in selective communication with one of said chambers for receiving portions of the mixed ingredients therefrom.

4,138,817

NAVIGATIONAL AID

Richard B. Frost, Eastwood; Joseph L. Juhasz, Georges Hall, and Barry W. Wing, Hornsby, all of Australia, assignors to Unisearch Limited, Australia

Filed Jan. 17, 1977, Ser. No. 759,630
Claims priority, application Australia, Jan. 23, 1976, 4607/76
Int. Cl.[2] G01C *21/20*
U.S. Cl. 33—1 SD 3 Claims



1. A navigation aid consisting of only three transparent indicia bearing members and only two connecting means comprising:

a first member having a pair of radially extending side edges defining the shape of a sector of a circle, said first member bearing a time, speed and distance grid wherein the lines defining said grid intersect at an origin, said first member further including a first speed scale extending along one of said radial sector edges having an origin coincident with said origin;

an elongate second member bearing a second speed scale adjacent a longitudinal slot formed therein, said second speed scale having an origin, said first and second members being pivotally interconnected by first connecting means at the point of their respective origins, and the second member extending radially outwardly from said point of pivotal interconnection at least substantially to the radial extremity of the first member;

said first and second members having drift scale indicia means provided integrally thereon for indicating the angle between said first and second speed scales; and

a third member bearing a wind speed scale and a wind direction scale, said third member being connected by second connecting means to said second member within said slot such that it may be rotated and moved longitudinally with respect to said second member.

4,138,818

DRAWING BOARD

Walter Hebel, Kirchen, Fed. Rep. of Germany, assignor to Firma Walter Hebel GmbH & Co., Kirchen, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,934
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648064; Mar. 17, 1977, 2711662
Int. Cl.[2] B43I *13/02, 7/02*
U.S. Cl. 33—76 R 2 Claims

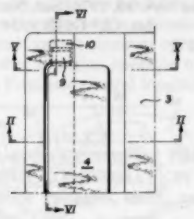
1. Drawing board, comprising:

(a) a main body having a broad upper surface,

(b) a first magnetic portion having an upper surface which is parallel to and extends beside the upper surface of the main body,

(c) a second magnetic portion having an upper surface which extends beside the upper surface of the first magnetic portion and is inclined thereto,

(d) a clamping bar overlying the upper surfaces of the first and second magnetic portions formed of a material that is attracted to the magnetic portions, and



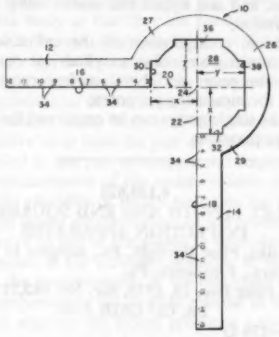
(e) means retaining the clamping bar in position on the main body with sufficient freedom of motion to allow it to selectively contact the upper surface of either the first or the second magnetic portion.

4,138,819

OUTSIDE CORNER SQUARE

Gershon J. Sosin, 5 Latimer St., Bloomfield, Conn. 06002

Filed Dec. 22, 1977, Ser. No. 863,149
Int. Cl.[2] B43L *7/00*
U.S. Cl. 33—113 7 Claims



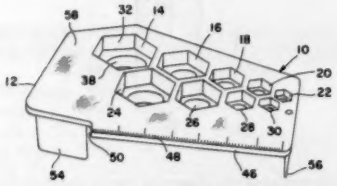
1. A square adapted for use on outside corners formed by approximately right angularly arranged first and second surfaces and an outwardly projecting obstruction at the corner, said square comprising first and second right angularly arranged arms each having a precise inwardly facing linear edge surface for engagement with said first and second surfaces, each of said arms terminating a substantial distance from an imaginary inside corner residing at the intersection of first and second lines projected respectively from said inwardly facing linear edge surfaces on said arms, and means interconnecting said first and second arms at their ends proximate said imaginary inside corner and maintaining said arms in said right angular relationship, said interconnecting means taking a generally particircular form with opposite ends thereof connected respectively with said proximate ends of said arms and with an intermediate portion thereof extending arcuately outwardly from said opposite ends and defining a clearance opening in the general shape of a segment for receiving said outwardly projecting obstruction at the corner of said first and second corner surfaces and thus enabling said linear arm inner edge surfaces to engage said corner surfaces, and said arms being provided with indicia of measurement serially spaced therealong from their said ends proximate said imaginary corner and referenced to said imaginary corner.

4,138,820

METRIC GAUGE

David O'Connor, P.O. Box 317, Warwick, N.Y. 10990

Filed Nov. 16, 1976, Ser. No. 742,512
Int. Cl.[2] G01B 3/34
U.S. Cl. 33—168 R 5 Claims



1. In a gauge for measuring nuts and bolts, including bolt heads and bolt screws, the combination of

a body,

said body being formed into a plurality of measuring sockets to gauge sizes of components of the nuts and bolts;

said sockets having means non-circular in cross section to gauge the wrench size of a bolt;

said sockets having means circular in cross section to gauge the diameter of a bolt;

said sockets further comprising cylindrical means to gauge nut size, said cylindrical means to gauge nut size extending from the circular means to gauge bolt diameter, said circular means and said cylindrical means being cylindrical in configuration;

the cylindrical configuration of the cylindrical means to gauge nut size comprising a cylindrical outer peripheral surface, the outer peripheral surface receiving the nut thereon for measuring purposes;

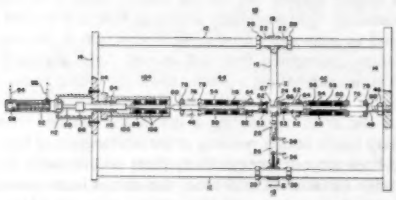
whereby the single gauge can be employed for a plurality of gauging operations.

4,138,821

PELLET LENGTH AND END SQUARENESS INSPECTION APPARATUS

Robert S. Wilks, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 23, 1975, Ser. No. 643,717
Int. Cl.[2] G01B 7/00
U.S. Cl. 33—174 Q 15 Claims



1. Apparatus for measuring the squareness of pellet end faces with respect to the pellet axis comprising:

a frame mounted on a suitable base;

a pellet holder on said frame having means for holding a pellet to be measured;

a pair of perpendicularity detectors mounted on said frame in axial spaced relationship, and said pellet holder being located intermediate said detectors;

each of said detectors having a movable end capable of conforming to the oppositely disposed end faces of said pellet;

each of said movable ends including a swivel plate;

means pivotally connecting each of said swivel plates to its detector for permitting said plates to pivot and conform to the ends of said pellet;

actuating means in said detectors for effecting engagement of the detectors' swivel plates respectively with said pellet ends; and

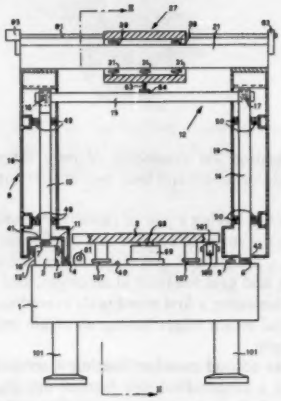
measuring means associated with each of said detectors for measuring the amount that each end face on the pellet is offset from the pellet axis.

4,138,822

PORTAL-TYPE PRECISION MEASURING APPARATUS

Mario Parodi, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Sep. 1, 1977, Ser. No. 829,900
Claims priority, application Italy, Sep. 30, 1976, 69332 A/76
Int. Cl.[2] G01B 7/28
U.S. Cl. 33—174 P 9 Claims



1. A precision measuring apparatus having a measuring head, a portal mounted to translate on a platform, comprising a pair of uprights, a first cross-piece supported by said uprights, a carriage bearing said measuring head, and running on said cross-piece, a second cross-piece parallel to the first cross-piece and movable with it, and resilient means for unloading the weight of said carriage on said second cross-piece, wherein the improvement comprises a second portal including said second cross-piece, a pair of columns, said second cross-piece being disposed below said first cross-piece, said uprights being hollow and housing inside each one the corresponding one of said columns, and a series of resiliently yielding bilateral links ensuring the carrying along of the second portal by the first portal.

4,138,823

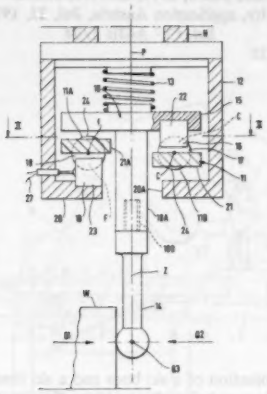
PROBE FOR USE IN MEASURING APPARATUS

David R. McMurtry, Wotton-under-Edge, United Kingdom, assignor to Rolls-Royce Limited, London and Renishaw Electrical Limited, Gloucestershire, both of, England

Filed Jan. 10, 1978, Ser. No. 868,382
Claims priority, application United Kingdom, Jan. 20, 1977, 02255/77
Int. Cl.[2] G01B 7/02
U.S. Cl. 33—174 L 8 Claims

1. A probe for use in measuring apparatus comprising a first, a second and a third member, at least three first seats on the second member at one side thereof and spaced symmetrically around an axis, the first member confronting said first seats, second seats on the third member in positions spaced symmetrically around said axis and such that there is one second seat situated angularly between each adjacent two first seats, an-

other side of said second member facing in a direction opposite to said one side and confronting said second seats, spring means for biasing the first member into engagement with said first seats and for biasing the second member into engagement



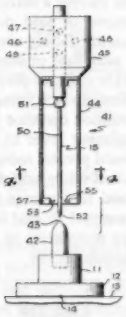
with said second seats, said first member constituting a holder for a stylus and being tiltable in opposition to said spring means about any adjacent two of said first seats and, through the intermediary of said second member, about any adjacent two of said second seats.

4,138,824

CENTER LOCATOR

Ronald R. Ponce de Leon, 5112 Sepulveda Blvd., Sherman Oaks, Calif. 91403

Filed Feb. 25, 1977, Ser. No. 772,257
Int. Cl.[2] B27G *23/00*; G01B *5/24*; G01C *9/00, 9/06*
U.S. Cl. 33—185 R **3 Claims**



1. A device for locating a predetermined point on a workpiece so that it is in alignment with a given point on a cutting tool, the combination comprising:

a tool holder having a releasable chuck for holding said cutting tool;

a workpiece holder for moveably supporting said workpiece;

a target means carried on said workpiece holder having a center point carried thereon;

a centering means downwardly depending from said tool holder in the absence of said cutting tool and said centering means having means for establishing a central longitudinal axis coinciding and coextensive with a central axis of said tool holder;

indicating means carried on said centering means for displaying registry between said target means center point and said centering means central longitudinal axis whereby said tool holder axis is indexed with and in alignment with said predetermined point on said workpiece;

said centering means is an electro-mechanical means including a pendulum swingable within a housing; and

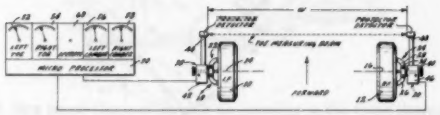
at least four electrical contact elements operably connected to a similar number of lights operable to display offset pendulum swing from said central longitudinal axis.

4,138,825

METHOD AND APPARATUS FOR PROVIDING RUNOUT COMPENSATION

Edmond R. Pelta, Pacific Palisades, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Sep. 26, 1977, Ser. No. 836,658
Int. Cl.[2] G01B *19/295, 19/575*
U.S. Cl. 33—228 **16 Claims**



11. An apparatus for providing runout compensation for wobble present in the measurements made of the orientation of a rotary body relative to at least a pair of planes, including

at least a pair of sensors angularly related to each other and with the sensors including means for rotatably coupling them to the body so that they are pendulously supported with respect thereto substantially about the axis of rotation of the body, said sensors including means for producing signals representative of the measurements of the angular orientation of the rotary body at a plurality of rotary positions of the body and with the measurements being relative to at least the pair of planes, and

means coupled to the pair of sensors and responsive to the signals representative of the measurements of the rotary body at the plurality of rotary positions for producing a first output signal representative of the orientation of the body relative to one of the planes in accordance with the measurements at the different positions in the one plane and with the measurements in the one plane providing a runout compensation for wobble present in the measurements and wherein the means produces a second output signal representative of the orientation of the body relative to the other of the planes in accordance with the measurements at the different positions in the other plane and with the measurements in the one plane providing a runout compensation for wobble present in the measurements in the other plane.

4,138,826

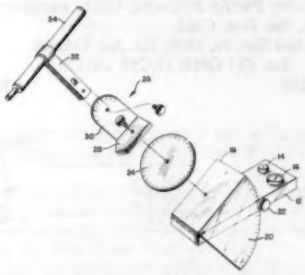
DEVICE FOR LOCATING CELESTIAL BODIES

Andy Inge, 803 W. 28th St. #202, Austin, Tex. 78705

Filed May 17, 1977, Ser. No. 797,825
Int. Cl.[2] G01C *1/00, 17/34*
U.S. Cl. 33—268 **1 Claim**

1. A device for locating celestial bodies, which comprises in combination a horizontally supporting platform having a level indicator and direction indicator for manual control and setting of said support platform both for direction and level, an inclined platform pivotally supported at one end of said horizontal supporting platform having a latitude indicator mounted to one inclined edge of said inclined platform and means for fastening said platforms together at a selected latitude angle, adjustably setting the angle of said inclined platform to said horizontal platform defining an arc of the horizon measured between the fixed point setting of the horizontal plane defined in true level of said support platform and a vertical arc passing

through the center of a celestial body to be viewed, a right ascension-azimuth dial pivotally supported for rotation centrally in the inclined plane surface of the inclined platform and having dial markings thereon corresponding to the sidereal time in hours, a right ascension declination scale having a pointer plate right-angularly fastened to a vertical scale plate and pivotally supported through the axis of said ascension-azimuth dial for rotation as guided by the said dial markings thereon and setting of a direction pointing to a celestial body to be located by the horizontally supported pointer end thereof, said vertical scale plate having an arcuate upper end and angu-



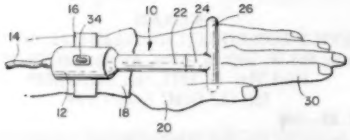
lar scale markings on the vertical surface along its arcuate edge for measurement of the arcuate position of a telescope support arm, said support arm being pivotally supported for rotation in an arc corresponding to said angular scale markings thereon, said pivotal support including means for fastening said support arm in selected arcuate pivotal position measured by said angular markings on said vertical scale plate, said arm supporting a telescope at right angles thereto and in the plane of rotation of said arm, whereby the direction of said telescope is measurably set in pivotally fastened position of said support arm to said vertical scale plate.

4,138,827

WRIST MOUNTED HAIR DRYER

Ronald Baugh, and Claudia Baugh, both of 975 S. 3rd St., Jacksonville, Oreg. 97530

Filed Nov. 9, 1977, Ser. No. 849,869
Int. Cl.[2] A45D *20/25*
U.S. Cl. 34—98 **4 Claims**



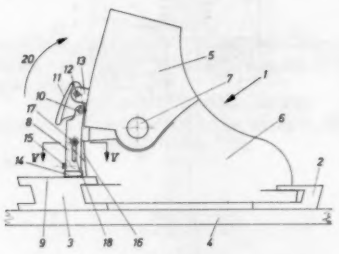
1. A wrist mounted hair drying apparatus comprising:
motor driven air blower means,
strap means connected to said blower means for mounting said blower means on the wrist of a user,
flexible hose means connected to the outlet of said blower means adapted to extend along the back of a hand of a user, said flexible hose means terminating in at least one air duct adjacent the palm of the hand of the user, and
means for mounting said flexible hose means on the hand of the user.

4,138,828

SKI BOOT

Axel R. Kubelka, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jul. 5, 1977, Ser. No. 813,328
Claims priority, application Austria, Jul. 21, 1976, 5353/76
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—121 **11 Claims**



1. In a combination of a ski boot and a ski binding, said ski boot having a lower shell and an ankle cuff pivotally secured to said lower shell to allow pivotal movement of said ankle cuff about a first pivot axis in response to shifts in the weight of an individual using said ski boot, said ski binding including at least a heel holder engaging the heel portion of said ski boot to hold said heel portion to a ski, said ankle cuff having support means extending rearwardly therefrom and including first means thereon defining a downwardly facing first surface, said heel holder including second means defining an upwardly facing second surface, said first surface directly engaging said second surface to limit the amount of pivotal movement of said ankle cuff to the rear of said lower shell, the improvement comprising wherein said first means includes a tensioning lever pivotally secured to said support means about a second pivot axis and an elongated bar pivotally secured to said tensioning lever about a third pivot axis spaced from said second pivot axis, said tensioning lever being pivotal between first and second positions, said elongated bar having a sufficient length to extend to and effect an engagement of said downwardly facing first surface with said upwardly facing second surface when said tensioning lever is in said first position to thereby limit the extent to which said ankle cuff can pivot rearwardly relative to said lower shell, said first surface being raised above said second surface a predetermined distance in response to a pivotal movement of said tensioning lever to said second position to thereby permit a rearward pivotal movement of said ankle cuff relative to said lower shell while said ski boot remains coupled to said ski bindings, said first means further including guide means operatively connected to said bar and said lower shell for guiding said bar for movement in response to the pivotal movement of said tensioning lever.

4,138,829

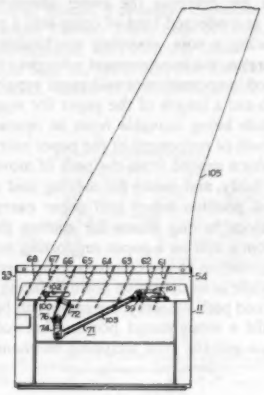
DISCHARGE VANE ARRANGEMENT FOR A POWERED SNOW THROWER

Alan L. Chase, Oostburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 24, 1978, Ser. No. 880,990
Int. Cl.[2] E01H *5/00*
U.S. Cl. 37—43 D **6 Claims**

1. A vane arrangement for a snow thrower of the type including a housing, an impeller mounted in the housing for rotation about a transverse axis, power means for rotating the impeller and walls in the housing defining an upwardly open, forwardly inclined discharge chute disposed above and extending transversely substantially coextensive with the impeller, the vane arrangement characterized by:
a plurality of laterally spaced, upright vanes in said chute supported on said housing for lateral tilting movement

between an intermediate position for directing the discharge straight ahead and oppositely pitched laterally tilted positions for directing the discharge to one lateral side or the other, the laterally outermost of said vanes



being disposed in upwardly converging relation to one another, and

a vane adjusting mechanism connected to said vanes for simultaneously adjusting the latter between said positions.

4,138,830

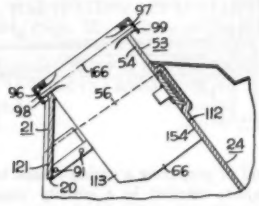
SNOW THROWER WITH COMBINED DISCHARGE VANE SUPPORT AND STRIKE-OFF WALL

Alan L. Chase, Oostburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 24, 1978, Ser. No. 881,003

Int. Cl.[2] E01H *5/00*

U.S. Cl. 37—43 D **8 Claims**



1. In a snow thrower having a powered impeller at the front thereof rotatable about a horizontal transverse axis, a discharge chute coextensive with and disposed above the impeller and discharge directing vanes in the discharge chute for directing snow thrown therethrough by the impeller, the improvement characterized by

wall means defining a housing including laterally spaced sidewalls, the lower portions of which support opposite ends of said impeller and the upper ends of which form the sidewall portions of said chute, a rear wall curving upwardly from a scraper edge and having an upper portion forming the rear wall portion of said chute and a front wall portion adjacent the front end of said sidewalls forming the front wall of said chute, said front wall portion extending substantially vertically when the snow thrower is in its normal working position, and

a plurality of laterally spaced upright vanes having their upper front and upper rear parts pivotally connected to the upper portions of said front and rear walls.

4,138,831

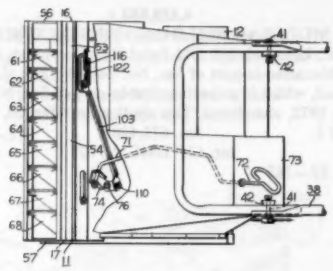
VANE ADJUSTING MECHANISM FOR A POWERED SNOW THROWER

Alan L. Chase, Oostburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 24, 1978, Ser. No. 881,004

Int. Cl.[2] E01H *5/00*

U.S. Cl. 37—43 D **9 Claims**



1. In a snow thrower having an impeller at the front thereof rotatable about a horizontal transverse axis, wall means defining a discharge chute including a rear wall with a lower portion curving upwardly at the rear of the impeller from a bottom transverse scraper edge and an upper flat portion extending in an upward and forward direction, the discharge chute being disposed above and extending transversely substantially coextensive with said impeller, the improvement characterized by:

a plurality of vertically disposed discharge directing vanes pivotally connected to said rear wall for movement between left discharge, straight ahead discharge and right discharge positions,

a transversely extending, forward opening recess in the upper portion of said rear wall,

a vane adjusting bar disposed in said recess so as to substantially avoid interference with the movement of snow through said discharge chute,

motion transmitting means connecting said vanes to said bar, and

control means for reciprocating said bar in said recess to simultaneously move said vanes between left, right and straight ahead discharge positions.

4,138,832

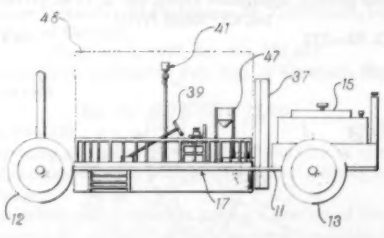
HOLE FILLING MACHINE

Carl Cooper, South Road 28, Ballantine, Mont. 59006

Filed Jul. 11, 1977, Ser. No. 814,143

Int. Cl.[2] E02F *5/22*

U.S. Cl. 37—142.5 **10 Claims**



1. A hole filling machine comprising a vehicle having a frame; drive means for said vehicle; a substantially horizontal rotatable blade assembly adjustably suspended from said frame, said blade assembly including a circular housing with a

central opening, a rotatable hollow vertical shaft disposed axially of said central opening of said housing, a plurality of arcuate blades extending outwardly from said rotatable shaft toward the periphery of said housing; drive means for said rotatable shaft; safety switch means disposed above said central opening; actuating means for said switch means; and means operatively connecting said safety switch means with said vehicle drive means and said shaft drive means.

4,138,833

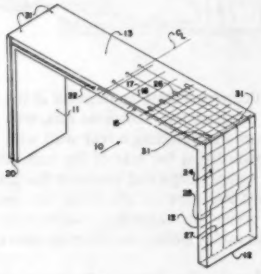
MODULAR BUILDING CONSTRUCTION

George F. Townend, 101 Old Point Rd., Deerhurst, Del. 19803

Continuation-in-part of Ser. No. 440,189, Feb. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 302,249, Oct. 30, 1972, abandoned. This application Mar. 31, 1976, Ser. No. 672,420

Int. Cl.[2] E04G *21/02*

U.S. Cl. 52—745 **2 Claims**



1. A method of making a building module having the shape of an inverted U with legs at least a full story high, a span of about 10 to about 30 feet between the legs, and a depth between about 2 and about 6 feet, which method comprises casting on a plain flat horizontal surface a series of surface panels not over about two inches in thickness, said panels being dimensioned to form the major surgaces of the module, after the case surface panels are sufficiently strong mounting the panels between spaced vertical supports in opposing vertical planes to define an open-ended vertically extending U-shaped cavity, casting setable material in said U-shaped cavity, and when the setable material is sufficiently strong tilting the U-shaped module to inverted U-position for use in a building.

4,138,834

PAPER SUPPLYING DEVICE IN COIN WRAPPING APPARATUS

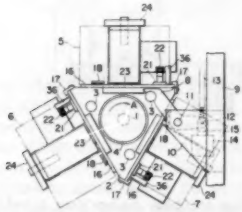
Iizuka Nobuhiro, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Jun. 28, 1977, Ser. No. 810,819

Claims priority, application Japan, Jul. 2, 1976, 51-78544

Int. Cl.[2] B65B *11/04*

U.S. Cl. 53—212 **6 Claims**



1. In a paper supplying device in a coin wrapping apparatus, comprising a movable paper carrying body and a plurality of paper supporting members provided on said paper carrying body, each of the paper supporting members supporting a specific kind of paper wound into a roll and adapted for wrapping a corresponding kind of coins, said paper carrying body being movable for bringing the paper supporting member corresponding to a selected kind of coins into a paper supplying position facing a coin wrapping mechanism of the coin wrapping apparatus, the improvement wherein a single cutting blade is provided in opposition to said paper supplying position and operates to cut a length of the paper for wrapping coins, said cutting blade being movable from an operative position located in the path of movement of the paper carrying body to a retracted position spaced from the path of movement of the paper carrying body, and means for moving said cutting blade to the retracted position when said paper carrying body is moved, said device having means for guiding the paper in a curved path from a roll on a paper supporting member at the paper supplying station to the coin wrapping mechanism, said cutting blade while in its operative position facing the concave side of said curved path whereby the paper will be cut when it is drawn toward a straightened position between the paper supplying device and the coin wrapping mechanism.

4,138,835

METHOD AND APPARATUS FOR PREPARING A CASING LOADED WITH A PLURALITY OF ARTICLES

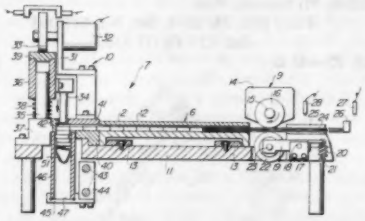
Takeo Takayanagi, Nara; Mamoru Inoue, Katano; Satoshi Kuwano, Kawanishi; Hitoshi Minabe, and Shunichi Yabuzaki, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 9, 1977, Ser. No. 823,116

Claims priority, application Japan, Aug. 16, 1976, 51-98014

Int. Cl.[2] B65B *5/10, 35/00*

U.S. Cl. 53—474 **10 Claims**



1. In a method of preparing a casing means loaded with a plurality of objects stacked in a serially aligned position therein, said objects having a geometrical shape which tends to occasionally change their orientation when left in a free condition within said casing means, the improvement which comprises the steps of: serially aligning end-to-end said plurality of objects in a magazine, aligning a top opening of said casing with a means storing a plurality of resilient means, inserting a first resilient means from said storing means within said casing means for frictionally engaging with the interior wall thereof to restrict the movement of said plurality of objects subsequently inserted from said top opening to a location adjacent thereto in a hollow space of said casing means, aligning said top opening of said casing means in operative relationship with respect to a leading one of said serially aligned plurality of objects in said magazine, sequentially feeding said plurality of objects out of said magazine towards said top opening of said casing means, and sequentially forcing said aligned plurality of objects one after another into said top opening of said casing means and onto said first resilient means to thereby sequentially force said first resilient means further into said casing means with the entrance of each object into said casing means whereby said plurality of objects are positioned one after

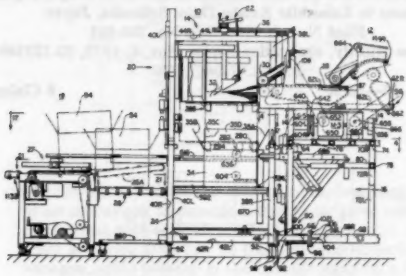
another in said hollow space of said casing means in a serially aligned and stacked manner.

4,138,836

MACHINE FOR PLACING FLAT ARTICLES IN A CASE

Norman P. Crowe, Miami Township, Clermont County, and Joseph M. Lohse, Terrace Park, both of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Sep. 15, 1977, Ser. No. 833,591
Int. Cl.[2] B65B *57/20, 35/50, 39/12*
U.S. Cl. 53—500 5 Claims



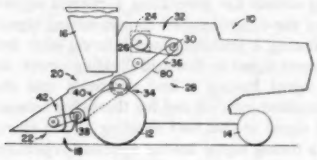
1. A machine for placing flat articles in a case which comprises a basket having a floor which can be opened, means for forming a stack of the articles in the basket, vacuum cup means for engaging and holding a case below the basket with a top of the case open, means for impressing a vacuum on the vacuum cup means, a switch actuated by the vacuum when the case engages the vacuum cup means, means controlled by the switch for permitting completion of forming of the stack only when the vacuum cup means is engaged by the case, means for lowering the basket into close proximity to the case, and means for opening the basket floor to discharge the stack into the case.

4,138,837

VARIABLE SPEED REVERSIBLE DRIVE FOR A HARVESTING APPARATUS

Mahlon L. Love, Osco, Ill., assignor to Deere & Company, Moline, Ill.

Filed Oct. 26, 1976, Ser. No. 735,378
Int. Cl.[2] A01D *69/06*
U.S. Cl. 56—11.2 17 Claims



1. In a header for a mobile harvesting machine, the header including gathering and feeding units and a power input shaft, the harvesting machine carrying a power source, an improved drive for the header comprising:

a drive sheave connected to and driven by the power source;

a driven sheave, coaxial with and driving the input shaft, including a first sheave half, a second sheave half coaxial with and axially shiftable relative to the first sheave half and cooperating with it so as to define a variable effective diameter V-belt groove, at least one of the sheave halves being rotationally deflectible relative to the input shaft, and automatic means coaxial with the driven sheave for axially biasing the second sheave half towards the first sheave half for adjusting the effective diameter in response to rotational deflection between the driven sheave and the input shaft caused by changes in the torque transmitted through the input shaft to the header; and

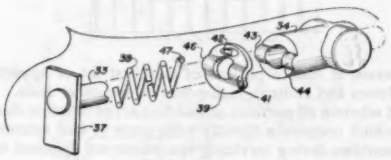
a V-belt trained around the drive and driven sheaves, engaging the driven sheave at its effective diameter, for transmitting power from the drive sheave to the driven sheave, the automatic adjustment of the driven sheave serving to maintain appropriate tension in the V-belt.

4,138,838

LOCKING MECHANISM FOR RAKE BASKET CRANK

John H. Long, Narvon, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 1, 1977, Ser. No. 820,666
Int. Cl.[2] A01D *77/06*
U.S. Cl. 56—377 2 Claims



1. In a crop handling apparatus having a main frame supported for movement along the ground, a subframe including crop engaging means, and a height adjusting suspension system interconnecting said main frame and subframe, said height adjusting suspension system including an elongate rod having a crank on one end and a threaded portion on the other end, a trunnion bearing fixedly connected to said main frame and supporting said rod adjacent said crank, a compression spring around said rod between said crank and said bearing, a washer on said rod between said spring and said bearing, said threaded end of said rod threadably connected to a pivotable linkage interconnecting said main frame and subframe whereby rotation of said crank causes said subframe to move vertically relative to said main frame,

the improvement in said height adjusting and suspension system comprising:

at least one crown on said bearing directed towards said crank end of said rod; and

said washer includes a spring-engaging means on one flat surface thereof and a first surface irregularity on the other flat surface thereof shaped substantially the same as said crown.

4,138,839

SERVICE DEVICE FOR ONE OR MORE OPEN END SPINNING FRAMES

Fritz Stahlecker, Josef-Neidhart-Str. 18, 7341 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Sep. 8, 1977, Ser. No. 831,413
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641394
Int. Cl.[2] D01H *9/10, 15/00*
U.S. Cl. 57—270 17 Claims

1. Servicing apparatus for servicing a plurality of spinning assemblies arranged side by side in an open end spinning frame, comprising:

a first mobile part instrument having a first set of function elements for executing a first servicing operation at respective spinning assemblies of the spinning frame,

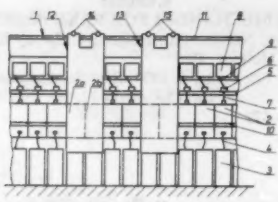
and a second mobile part instrument having a second set of function elements for esecuting a second servicing operation at respective spinning assemblies of the spinning frame, said first and second part instruments being mov-

able between respective spinning assemblies independently of one another,

wherein said first part instrument is wider in its travel direction than each of the individual spinning assemblies,

wherein said first part instrument includes a first set of appurtenant drives and controls for said first set of function elements,

wherein said first part instrument is divided into an edge zone and at least one other zone adjacent said edge zone in the travel direction of said first part instrument,



wherein at least a portion of said first set of appurtenant drives and controls is disposed in said other zone,

and wherein all portions of said first set of function elements which cooperate directly with parts of said spinning assemblies during servicing operations are disposed in said edge zone with all parts of said first part instrument positioned so as not to physically interfere with operation of said second part instrument during simultaneous performance of said first and second servicing operations at respective immediately adjacent spinning assemblies.

4,138,840

HEAT TRANSFER

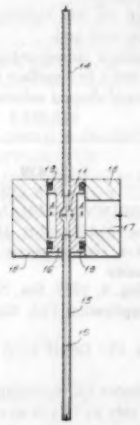
John M. Greenway, and Frederick W. Shaw, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, Great Britain

Continuation of Ser. No. 623,884, Oct. 20, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,313

Claims priority, application United Kingdom, Oct. 18, 1974, 45206/74; Nov. 6, 1974, 47974/74

Int. Cl.[2] D01H *13/28;* D02G *1/02*

U.S. Cl. 57—289 **4 Claims**



1. In a false twisting process for continuous filament yarn wherein substantially parallel filaments are fed into a false twisting device, the improvement comprising transferring heat between an advancing continuous filament yarn and a fluid prior to subjecting said yarn to a false twisting operation, said yarn being advanced in the direction of its longitudinal axis through two substantially non-twisting and non-interlacing fluid vortices generated by fluid streams tangentially and symmetrically arranged about the path of the advancing yarn, said vortices decaying freely in opposite co-axial directions from their point of generation to the point of escape into the atmosphere, whereby heat exchange is effected while maintaining the individual filaments of the yarn bundle in substantially parallel configuration, and then false twisting said yarn.

4,138,841

ELECTRONIC TIMEPIECE

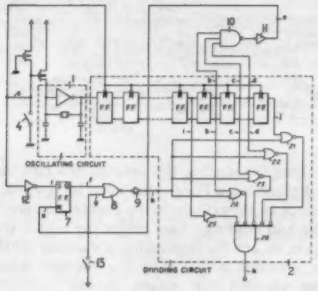
Shojiro Komaki, and Nobuo Shimotsuma, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Nov. 3, 1976, Ser. No. 738,461

Claims priority, application Japan, Nov. 4, 1975, 50-132349

Int. Cl.[2] G04C *3/00*

U.S. Cl. 58—23 R **8 Claims**



1. In an electronic timepiece:

an oscillator circuit for generating a repetitive time standard signal; a dividing circuit receptive of said repetitive time standard signal for dividing the same and for generating a repetitive timing signal having a repetition rate defining an interval of time, said dividing circuit including timing signal control means responsive to a control signal for changing the repetition rate of said timing signal generated by said dividing circuit, and said dividing circuit including resetting means responsive to a reset signal applied thereto for resetting said dividing circuit; reset signal generating means for generating a reset signal and for applying the reset signal to said resetting means to reset said dividing circuit; control signal generating means responsive to the reset signal and cooperative with said dividing circuit for generating a control signal and for applying the control signal to said timing signal control means during a predetermined interval after termination of said reset signal so that said dividing circuit develops a timing signal having a first repetition rate during the predetermined interval and for thereafter terminating the control signal so that said dividing circuit thereafter develops a timing signal having a second repetition rate.

4,138,842

LOW EMISSION COMBUSTION APPARATUS

Eugene B. Zwick, 16841 Edgewater La., Huntington Beach, Calif. 92647

Division of Ser. No. 629,071, Nov. 5, 1975, Pat. No. 4,044,549, which is a continuation of Ser. No. 313,681, Dec. 11, 1972, abandoned. This application Jun. 6, 1977, Ser. No. 803,429

Int. Cl.[2] F02C *9/14*

U.S. Cl. 60—39.23 **28 Claims**

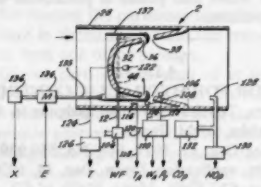
1. In combination, for reducing the nitrogen oxide and carbon monoxide content of exhaust gases;

a burner having a combustion zone, igniter means within the combustion zone and a dilution zone positioned down-

stream and in flow communication with the combustion zone;

means to mix a hydrocarbon fuel and air to form a substantially homogeneous combustible mixture having a fuel to air ratio of about 0.0035 to about 0.035;

means to split an incoming stream of air into separate streams with a first stream being mixed with the fuel and fed to the combustion zone and a second stream being fed to the dilution zone, and



control means to control the splitting of the incoming stream of air or oxygen to provide a fuel to air ratio within the combustion zone which maintains the combustion temperature at about 3,000° F. or less sufficient to reduce the nitrogen oxide content in the exhaust gases to a level of about 1.5 grams or less for each kilogram of consumed fuel and to maintain stable combustion at a sufficient level above lean blowout to provide reduced carbon monoxide levels in the exhaust gases of about 12.0 grams or less per kilogram of consumed fuel.

4,138,843

EXHAUST GAS REACTION CHAMBERS FOR INTERNAL COMBUSTION ENGINE

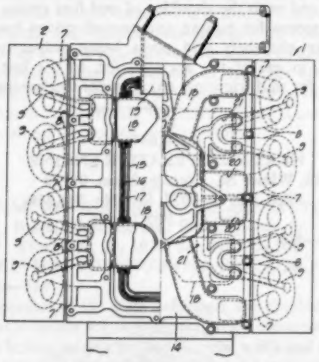
Yoshitoshi Sakurai, Kawasaki; Takao Okura, Ooimachi, and Minoru Tanaka, Chofu, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 487,998, Jul. 12, 1974, Pat. No. 3,965,881. This application May 6, 1976, Ser. No. 684,065

Claims priority, application Japan, Jul. 18, 1973, 48/80253

Int. Cl.² F01N *3/10*

U.S. Cl. 60—282 **4 Claims**



1. In an internal-combustion piston engine having a plurality of cylinders each provided with a combustion chamber, the improvement comprising, in combination: passage means including valved intake passages for supplying air-fuel mixture to each of said combustion chambers, a main exhaust gas reaction chamber positioned in heat exchange relationship with said passage means to heat the air-fuel mixture, a valved exhaust passage leading from each combustion chamber, at least one auxiliary exhaust gas reaction chamber connected to receive hot exhaust gases from two exhaust passages of different exhaust timing, said auxiliary reaction chamber communicating with the interior of the main reaction chamber, said auxiliary reaction chamber being substantially larger in cross-section than each of said exhaust passages and substantially smaller in volume than said main reaction chamber.

4,138,844

SYSTEM FOR REDUCING POLLUTANTS IN ENGINE EXHAUST GAS

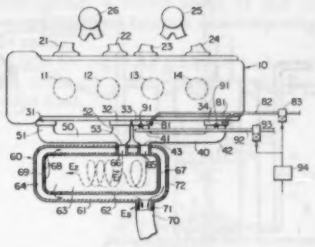
Kenji Masaki; Suzuo Suzuki, both of Yokohama, and Mitinobu Konno, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 12, 1974, Ser. No. 496,894

Claims priority, application Japan, Aug. 17, 1973, 48/92290

Int. Cl.² F01N *3/10, 3/12*

U.S. Cl. 60—286 **6 Claims**



1. A system for reducing concentrations of harmful substances in an exhaust gas from an internal combustion engine before emission into the atmosphere, the engine having at least four and an even number of combustion chambers, the system comprising:

a first exhaust manifold communicable with a first group of combustion chambers consisting of one half of said combustion chambers being fired in succession, and having an outlet;

a second exhaust manifold communicable with a second group of combustion chambers consisting of the other half of said combustion chambers also being fired in succession, and having an outlet, said first group of combustion chambers being fired in succession before said second group of combustion chambers is fired in succession and this order of firing continuing through the successive firing of the combustion chambers in the engine;

first means to cause said first exhaust manifold to discharge a first exhaust gas containing relatively large amounts of unburned fuel and carbon monoxide and to cause said second exhaust manifold to discharge a second exhaust gas containing relatively small amounts of unburned fuel and carbon monoxide and a relatively large amount of air; and

a thermal reactor having a body forming therein a generally cylindrical reaction chamber having two inlets and an exit, said two inlets being connected with said outlet of said first exhaust manifold and said outlet of said second manifold, respectively, and being located relatively close to one end wall of said reaction chamber, said exit being located in another end wall of said reaction chamber relatively remote from said one end wall and arranged such that an exhaust gas supplied to said reaction chamber through either of said two inlets is discharged through said exit after being retarded in its movement by the resistance of said another end wall of said reaction chamber; whereby a stream of one or said first and second gases in said reaction chamber is retarded so that a stream of the other exhaust gas subsequently fed to said reaction chamber overtakes and gradually mingles with the former stream before the respective streams are discharged completely from said reaction chamber, in which said exit of said reaction chamber takes the form of a plurality of holes

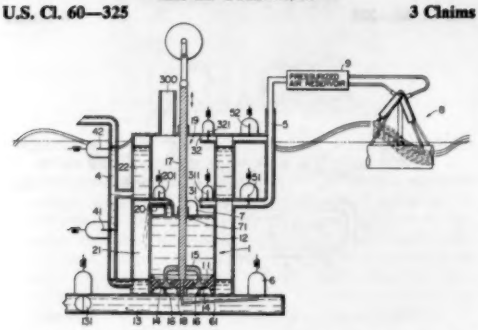
formed through a portion of the body of said reaction chamber including said other end wall, further comprising second means to supply auxiliary air to said first exhaust gas when the engine load is below a predetermined value to burn a portion of said unburned fuel within said first exhaust manifold and thereby to prevent an excessive reduction of said first exhaust gas temperature.

4,138,845

RECIPROCATING MOTORS

Seiichi Kitabayashi, No. 919-12 Koshikiya, Ageo-shi, Saitama, Japan

Filed Jul. 29, 1977, Ser. No. 820,193
Int. Cl.[2] F16D *31/02*
U.S. Cl. 60—325 **3 Claims**



1. A reciprocating apparatus driven by static water pressure, comprising,

(A) a reciprocating device forming a lower portion of said reciprocating apparatus, said reciprocating device being composed of;

(a) a vertical cylinder having a bottom opened to a first water pipe provided with a first water valve for controlling water running into said vertical cylinder;

(b) a piston having at least one valve hole and slidably disposed in said vertical cylinder, said valve hole being capable of being opened at an upper dead end position of said piston and held open during downward stroke thereof and closed at a lower position; and

(c) an axial connecting member having a lower end connected to said piston and an upper end connected to a utilization means;

(B) a pumping device composed of;

(a) at least two annular tanks axially adjacent one another and surrounding said cylinder, the lowermost one of said tanks is communicated with an upper end portion of said cylinder via a second water pipe provided with a second water valve;

(b) a manifold water pipe having one end opened to atmosphere and the other end branched to two branches each connected to a bottom portion of each of said tanks, said manifold water pipe being further provided with two third water valves to establish a selective water communication between said tanks or between said uppermost tank and said one end, respectively; and

(c) a manifold air pipe having one end connected to an air pressure source and the other end branched to two branches each connected to an upper portion of each of said tanks, said manifold air pipe being provided with two first air valves each to allow a selective air communicating between each of said tanks and said pressure source and two second air valves to allow a selective air communication between each of said tanks and atmosphere;

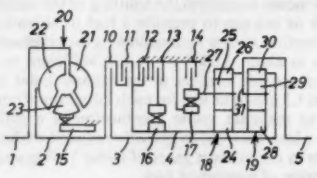
(C) control means for detecting the position of said piston in said cylinder to open said first, said second and one of said third water valves disposed between atmosphere and said upper tank, and said first air valve connected to said upper tank and said second air valve connected to said lower tank when said piston is at the lower position, and to close said first, said second and one of said third water valves disposed between atmosphere and said upper tank, and said first air valve connected to said upper tank and said second air valve connected to said lower tank and open one of said third water valves disposed between said upper and lower tanks, and said first air valve connected to said lower tank and said second air valve connected to said upper tank when said piston is positioned at said upper dead end position.

4,138,846

ACCUMULATOR FOR HYDRAULIC CONTROL SYSTEM

Shiro Sakakibara, Toyokawa, Japan, assignor to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Dec. 12, 1977, Ser. No. 859,939
Claims priority, application Japan, Dec. 14, 1976, 51-150654
Int. Cl.[2] F16L *55/04*; F16D *31/02*
U.S. Cl. 60—435 **3 Claims**



1. An accumulator for a hydraulic control system of frictional engagement mechanisms, comprising:

a housing provided therein with a stepped bore;

a first stepped piston reciprocable within said bore to form an annular back pressure chamber in open communication with a port provided through said housing, said first piston being provided therein with an annular stepped shoulder;

a second piston reciprocable within said first piston in a predetermined stroke to form a pressure chamber in open communication with another port provided through said housing, said second piston being engaged at its retracted stroke end with the shoulder of said first piston; and

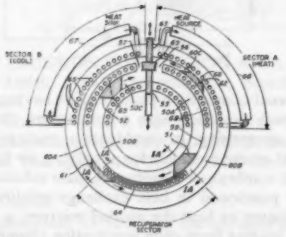
resilient means for biasing said second piston toward said pressure chamber; said ports being respectively connected, in use of the accumulator, to the line pressure circuit for said frictional engagement mechanisms.

4,138,847

HEAT RECUPERATIVE ENGINE

Craig C. Hill, Winter St., Lincoln, Mass. 01773

Filed Jul. 11, 1977, Ser. No. 814,388
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—508 **17 Claims**



1. An engine comprising

(1) a stator providing a plurality of cavities,

(2) each cavity receiving a rotor whereby the walls of the cavity and the rotor form a generally annular passage for accommodating the flow therealong of a working medium,

(3) each rotor carrying a plurality of partitions which extend across the passage, the partitions being spaced apart by fixed angles and being arranged to transit around the passage whereby two adjacent partitions form end walls of a closed chamber which moves around the passage upon rotation of the rotor,

(4) means for causing the partitions in one passage to transit that passage in timed relation to the transit of the partitions in at least one other passage,

(5) two adjacent partitions in each of at least two of the aforesaid timed relation passages providing a moving chamber whose volume remains constant during at least an appreciable part of each full revolution of the rotor,

(6) each passage having blocking means forming a closure across the passage and inhibiting the working medium from flowing through the blocked portion of the passage,

(7) means permitting the partitions in their transit around a passage to pass the blocking means, whereby those partitions can revolve continuously,

(8) at least one inlet port and one outlet port in each passage, the inlet and outlet ports of the passage being situated adjacent to and being respectively on opposite sides of the blocking means, whereby working medium inducted through an inlet port first occupies a chamber of increasing volume, then a moving chamber transiting the passage, then a chamber of decreasing volume from which it is exhausted through the outlet port,

(9) duct means interconnecting the passages, whereby a series of passages is formed having an outlet port of a passage connected by a duct to an inlet port of the next passage in the series, and working medium can be inducted into the inlet port of a first passage and later exhausted from the outlet port of the last passage, having been swept in turn through every passage in the series from first to last flowing from passage to passage through the interconnecting ducts,

(10) recuperative heat transfer means arranged to heat the wall surface of at least a portion of the length of arc traversed in one of said at least two passages by a moving constant volume chamber whereby working medium in the constant volume chamber is heated as it is swept along the heated wall portion and arranged to cool the wall surface of at least a portion of the length of arc traversed by a constant volume chamber in the other of the said at least two timed relation passages, whereby the working medium in that constant volume chamber is cooled as it is swept along the cooled wall portion.

4,138,848

COMPRESSOR-EXPANDER APPARATUS

Kenneth C. Bates, 28 Scenic Dr., Poughkeepsie, N.Y. 12603

Filed Dec. 27, 1976, Ser. No. 754,508

Int. Cl.[2] F02G *1/04*; F25D *9/00*; F01C *1/20, 19/04*

U.S. Cl. 60—519 **11 Claims**

1. In apparatus of the class described, the combination of:

compressor means for compressing fluid comprising

a first hollow casing having two end walls and a cylindrical side wall forming first and second cylindrical chambers opening into each other and having parallel axes,

a first inlet extending through one of said end walls for continuously admitting relatively low pressure fluid into said casing,

a first outlet extending through one of said end walls for exhausting relatively high pressure fluid from said casing,

and first and second cylindrical rotors mounted in said casing for rotation about axes coaxial with said axes of said chambers;

said first and second rotors each comprising

an inner portion of a constant radius,

an outer portion of a constant radius larger than that of said inner portion and substantially equal to that of the chamber in which the rotor is mounted, and volute portions extending between said inner and outer portions, said volute portions having progressively larger radii that constantly increase in size from said inner portion to said outer portion;

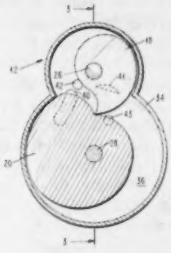
said rotors having continuous engagement with each other and with said casing throughout each complete rotation to define an intake region at said inlet for continuously receiving said low pressure fluid and a contractible chamber within which fluid is compressed between volute portions of said rotors which form reaction surfaces, said outlet allowing compressed fluid to flow from said contractible chamber;

expander means for expanding fluid, said expander means being substantially a mirror image of said compressor means in structure and function and comprising

a second casing,

a second inlet for receiving relatively high pressure fluid,

a second outlet for exhausting relatively low pressure expanded fluid,



and third and fourth rotors defining an exhaust region at said second outlet for continuously exhausting expanded fluid therethrough, said third and fourth rotors further defining an expansible chamber within which fluid from said second inlet is expanded;

means interconnecting all of said rotors for simultaneous synchronous rotation to concurrently compress fluid in said compressor means and expand fluid in said expander means;

means including fluid utilization means connected between said casings for transferring compressed fluid and expanded fluid between said compressor means and said expander means;

seal means mounted on said outer portions of said rotors for rotation therewith, said seal means being sealingly engaged with said casings and the other ones of said rotors during a portion of one complete rotation and disengaged therefrom during another portion of a rotation, said seal means being mounted for sliding movement in a radial direction,

and spring means interconnecting said seal means and said rotors and operative to exert forces on said seal means opposing centrifugal forces therein and limiting radially outward movement thereof while disengaged.

4,138,849

EXHAUST BRAKING VALVE

Dennis A. Wilber, Elizabethtown, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

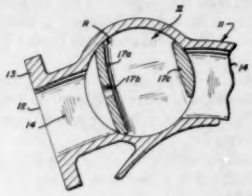
Filed Jun. 6, 1977, Ser. No. 803,432

Int. Cl.[2] F02B *37/00*

U.S. Cl. 60—602 **4 Claims**

1. An exhaust gas braking valve for use with an internal combustion engine having an exhaust manifold and a turbocharger provided with a turbine wheel and a housing having a

turbine wheel chamber, said valve comprising a hollow section having an inlet for communicating with the exhaust manifold and an outlet for communicating with the turbine wheel chamber, and a member mounted within said hollow section for selective rotary adjustment about a predetermined axis between braking and non-braking modes, axially spaced portions of said member being in journal support relation with said hollow section, said member being provided with a flow passage disposed intermediate said journal supported portions of said member and substantially transversely of said rotary axis and interconnecting said hollow section inlet and outlet and



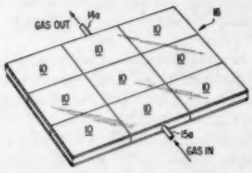
effecting substantially unrestricted exhaust gas flow through said valve, when said member is in said non-braking mode; said member, when in said braking mode, having a segment thereof disposed in substantially blocking relation with said hollow section inlet and outlet for substantially interrupting the exhaust gas flow, said segment being provided with bleeder means whereby a substantially reduced predetermined exhaust gas flow continues through the valve, when said member is in said braking mode, for maintaining rotation of the turbine wheel at an idling speed within the housing chamber while a predetermined engine exhaust gas back pressure is maintained within the exhaust manifold.

4,138,850

SORPTION SYSTEM FOR LOW-GRADE (SOLAR) HEAT UTILIZATION

Dimiter I. Tchernev, 9 Woodman Rd., Chestnut Hill, Mass. 02167

Continuation of Ser. No. 520,808, Nov. 4, 1974, Pat. No. 4,034,569. This application Aug. 2, 1976, Ser. No. 710,609
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **10 Claims**



1. An efficient system for a low-grade heat utilization which converts small variations in absolute temperature to relatively large variations of gas pressure, the system comprising:

a hermetically sealed container, said container having an inlet and an outlet each with a one-way valve;

a solid absorbent material composed of molecular sieve zeolite in said container, said absorbent material adapted to absorb an expansible gaseous fluid which enters said container through said inlet when relatively cool and to expel said fluid through said outlet when relatively heated;

a low-grade heating means adapted periodically to raise the temperature of said absorbent material;

a source of gaseous fluid adapted to be absorbed by said absorbent material available to said inlet; and

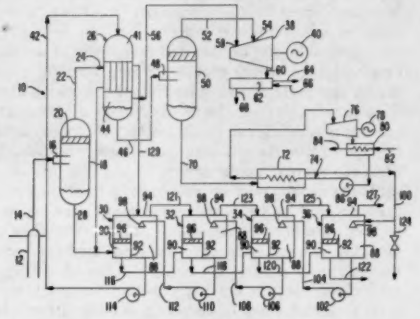
a heat energy utilization means comprising a reciprocating engine connected to said outlet.

4,138,851

APPARATUS AND METHOD OF GEOTHERMAL ENERGY CONVERSION

Alfred N. Rogers, Pleasanton, Calif., and Leon Awerbuch, Tel Aviv, Israel, assignors to Bechtel International Corp., San Francisco, Calif.

Filed Aug. 1, 1977, Ser. No. 820,984
Int. Cl.[2] F01K *17/04*; F03G *7/00*
U.S. Cl. 60—641 **20 Claims**



1. Apparatus for converting the heat energy of geothermal brine to useful work comprising: means defining a first fluid flow path for a distillate, said defining means including a first heat exchanger, a second heat exchanger, and a number of flash chambers coupled in series relationship; means adapted to be coupled to a geothermal well for forming steam from the heat content of the geothermal brine from the well; means coupled with said forming means for directing the steam into heat exchange relationship with the distillate flowing through the first heat exchanger to vaporize a portion of the distillate to generate steam free of corrosive and scale-forming compounds; means coupled with the first heat exchanger for directing the steam generated therein to a work-producing apparatus; and means coupled with said forming means for directing brine through the flash chambers in counterflow relationship to the flow of distillate therethrough to pre-heat the distillate before it reaches the first heat exchanger, said second heat exchanger adapted to be placed in heat exchange relationship to a second fluid flow path of a subsystem containing a work-producing unit so that heat energy can be transferred from the distillate flowing along said first path to a working fluid flowing along said second path.

4,138,852

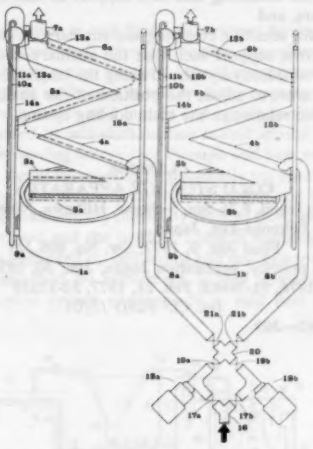
STEAM GENERATION AND POLLUTION CONTROL SYSTEM

Dennis H. Jackson, 850 W. Osborn Rd., Phoenix, Ark. 85013

Filed Aug. 10, 1977, Ser. No. 823,478
Int. Cl.[2] B01F *3/04*; F01K *21/00*
U.S. Cl. 60—670 **4 Claims**

1. A method for the effective utilization and cleaning of high temperature effluent gases from a furnace comprising capturing all of the effluent gases eminating from the furnace, directing said effluent gases through a heat exchanger for the production of steam generated power, and subsequently passing said gases through contaminate removal means prior to expulsion of the gases into the atmosphere, wherein the passage of said effluent gases through contaminate removal means is accomplished by passing said gases upwardly through a hollow zig-zag column, the lower end of which is emersed in a tank of water, while continuously spraying water into said

gases along the entire length of said column to precipitate all contaminates and metal values into said water tank and discharging the clean effluent gases into the atmosphere at the top of said column.

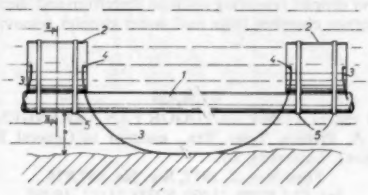


4,138,853

DEVICE FOR POSITIONING A SUBMERGED PIPELINE

Jacques E. Lamy, Fontenay-aux-Roses, France, assignor to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France

Filed Oct. 3, 1977, Ser. No. 839,194
Claims priority, application France, Oct. 1, 1976, 76 29577
Int. Cl.[2] F16L *1/00*
U.S. Cl. 405—171 **27 Claims**



1. A device for laying and positioning a pipeline intended to be supported at the bottom of a body of water, by towing the pipeline, said device comprising:

(a) a plurality of support members distributed along the pipeline and extending in a direction generally parallel to the vertical plane containing the longitudinal axis of the pipeline,

(b) said support members projecting below the pipeline towards the bottom to slide thereon and being deformable in said vertical plane by the reaction of the bottom on said members, but transversely rigid.

4,138,854

FREEZING APPARATUS AND METHOD

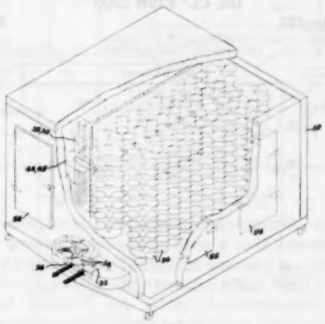
Alfred H. Schlemmer, Ninevah, Ind., assignor to Edinburg State Bank, Edinburg, Ind.

Filed Dec. 9, 1974, Ser. No. 531,249
Int. Cl.[2] F25D *25/00*
U.S. Cl. 62—62 **2 Claims**

1. A method or process for cooling unfrozen foodstuff to a desired low temperature below the freezing point thereof, in an enclosure having a foodstuff entrance and a foodstuff exit, comprising the steps of:

supplying a gas consisting substantially of carbon dioxide into the said enclosure in an amount sufficient to at least substantially purge the air and water vapor therefrom,

and continuing to supply whatever additional gas is necessary to maintain sufficient gas pressure inside said enclosure in comparison to the air pressure outside the enclosure so that leakage at the entrance and exit of the enclosure does not admit any significant amount of either air or water vapor into said enclosure,



in which the entire lowering of temperature of the foodstuff, from its unfrozen state and down through its freezing point and clear down to its said sub-freezing desired low temperature thereof, is by refrigerating means including a refrigerant fluid system including compression means and expansion means by which heat from said foodstuff is removed by the expansion of refrigerant fluid,

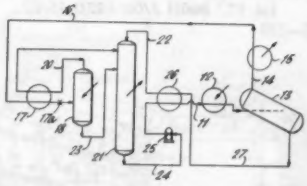
in a combination in which the coldest region of said refrigerant fluid system is operatively adjacent the portion of foodstuff which is at its lowest temperature.

4,138,855

TRANSFERRING HEAT FROM RELATIVELY COLD TO RELATIVELY HOT LOCATIONS

Christian C. Jahan, Bois Guillaume, and Jacques Bouvin, Gremichon par Saint Martin du Vivier, both of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 20, 1977, Ser. No. 807,970
Claims priority, application United Kingdom, Jun. 25, 1976, 26523/76; Sep. 24, 1976, 39759/76
Int. Cl.[2] F25B *15/00*
U.S. Cl. 62—112 **16 Claims**



16. In an absorption refrigeration process wherein a working fluid is circulated through an evaporator to an absorber for absorption therein by an absorbent liquid and the working fluid in said absorbent liquid is subsequently heated and separated into a rich working fluid and an absorbent-rich liquid, the improvement comprising: employing a working fluid and an absorbent liquid which, within the range of thermodynamic conditions encountered in said absorber, are capable of form-

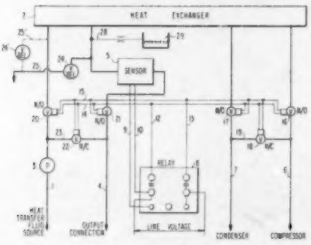
ing a solution having a lower critical solution temperature, t_c, and subsequently heating said solution to a temperature above t_c whereby said solution forms a first liquid phase comprising a rich working fluid and a second liquid phase comprising an absorbent-rich liquid.

4,138,856

LEAK DETECTOR DEVICE

Raymond Orlowski, Clifton Park, N.Y., assignor to Sun-Econ, Inc., Ballston Lake, N.Y.

Filed Oct. 7, 1977, Ser. No. 840,430
Int. Cl.[2] F25B *1/00*
U.S. Cl. 62—181 **19 Claims**



1. Apparatus responsive to leaks occurring in a heat exchanger between a first tubular passageway which transports a heat transfer fluid at a relatively lower pressure and a second surrounding concentrically tubular passageway which transports a refrigerant gas at a relatively higher pressure comprising:

sensor means responsive to a change in a parameter of only the heat transfer fluid in said first passageway indicative of a leak between said first and second tubular passageways;

and means actuated by said sensor means for interrupting flow through at least one said first and second passageways to prevent the further leakage of refrigerant gas into the heat transfer fluid;

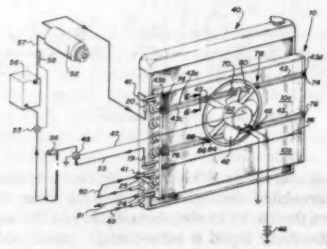
said means actuated by said sensor means being manually resettable to a normal condition providing fluid flow through said first and second tubular passageways within said heat exchanger.

4,138,857

COOLING SYSTEM BRACKET ASSEMBLY FOR AUTOMOTIVE VEHICLES

Gerhard Dankowski, Rte. 2, Box 59A, Royse City, Tex. 75089

Continuation-in-part of Ser. No. 713,352, Aug. 11, 1976, Pat. No. 4,063,431. This application Jul. 29, 1977, Ser. No. 820,099
Int. Cl.[2] B60H *3/04*; F25D *25/02*
U.S. Cl. 62—239 **11 Claims**



1. A bracket assembly for securing an auxiliary cooling system for a main automobile cooling system, comprising:

a first support having two spaced arms and means for joining said arms in a parallel relationship,

means for attaching said first support to said main cooling system, and

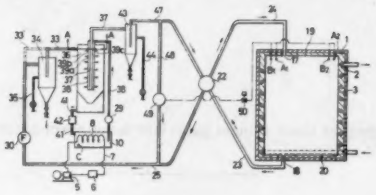
means for selective clamping and auxiliary cooling system to said first support such that the auxiliary cooling system may be selectively moved along the longitudinal length of said arms to adjust the position of the auxiliary cooling system relative to the main cooling system.

4,138,858

COLD STORAGE APPARATUS

Masahiko Izumi, 8,26-ban, 5-chome, Hiikawa, Nishi-ku, Fukuoka-shi, Fukuoka-ken, Japan

Filed Jun. 9, 1977, Ser. No. 805,221
Claims priority, application Japan, Jun. 30, 1976, 51-76462; Jun. 30, 1976, 51-76463; Feb. 21, 1977, 52-17219
Int. Cl.[2] F25D *17/04*
U.S. Cl. 62—309 **10 Claims**



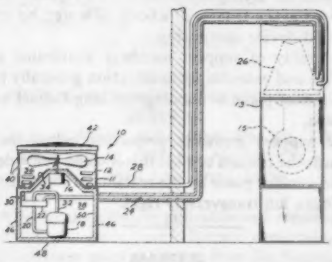
1. A cold storage apparatus comprising a cold storage chamber, a cold water spraying cyclone through which cooling gas is circulated and in which cold water is sprayed to said gas to cool said gas and increase its moisture content, a water droplet removing cyclone in which the low temperature moisture rich gas obtained in said cold water spraying cyclone is freed of water droplets, and a circulation pipe to feed the gas from said cold storage chamber to said cold water spraying cyclone, to the water droplet removing cyclone therefrom and then to the cold storage chamber from said water droplet removing cyclone.

4,138,859

SPLIT HEAT PUMP OUTDOOR FAN ARRANGEMENT

Joseph A. Pietsch, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 2, 1977, Ser. No. 847,874
Int. Cl.[2] F25B *13/00*; F25D *23/12, 19/00*
U.S. Cl. 62—324 **4 Claims**



1. A split refrigeration system air conditioner of the heat pump type including an indoor section having an indoor heat exchanger and air moving means for moving indoor air through said heat exchanger, and an outdoor section comprising:

a housing;

an interior partition means in said housing defining separate

first and second compartments arranged within said housing;

a motor-compressor means arranged in the first compartment;

an electric motor in said first compartment having a rotatably arranged shaft having a portion extending through said partition means into said second compartment;

an indoor heat exchanger in said second compartment being arranged between said ingress and egress openings;

a fan mounted on said shaft portion in said second compartment for moving outdoor air through said heat exchanger;

insulating means surrounding substantially the entire interior wall area of said first compartment so that said first compartment is essentially thermally isolated from said second compartment and the outdoor ambient temperature, and the heat generated by said motor and said motor-compressor is absorbed by refrigerant in said compressor and refrigeration system components in said first compartment.

4,138,860

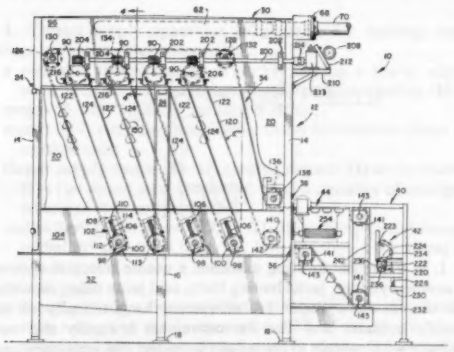
CHILLER FOR EDIBLE PRODUCTS

Russell F. Drummond, Marietta, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,227

Int. Cl.[2] F25D *17/02*

U.S. Cl. 62—375 **19 Claims**



1. A chiller for edible food products of the type employing hygroscopic liquid refrigerant, said chiller comprising:

an enclosure having an entrance and an exit;

an endless conveyor means for conveying edible food products and extending within said enclosure from said entrance to said exit of said enclosure, said conveyor defining a plurality of angled flights, said flights extending within said enclosure in spaced, parallel relation to each other, alternate flights extending upwardly and downwardly to alternately convey edible food products in upward and downward directions, and each of said flights being disposed in a plane angled with respect to a vertical plane at an angle α less than 90°; and

a liquid refrigerant supply means positioned in said enclosure for directing liquid refrigerant downwardly over the edible food products carried by said conveyor, said alternate flights extending upwardly and downwardly providing for said liquid refrigerant contacting edible food products on several of said flights in a cascading manner to increase the contact between the edible food products and said refrigerant and to evenly cool the edible food products.

4,138,861

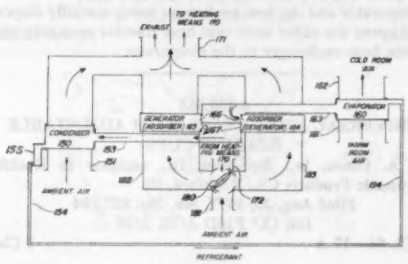
SOLID ADSORPTION AIR CONDITIONING APPARATUS AND METHOD

Wurm, Jaroslav, N. Riverside, Ill., assignor to Institute of Gas Technology, a nonprofit corporation, Chicago, Ill.

Filed Mar. 24, 1977, Ser. No. 780,692

Int. Cl.[2] F25B *17/08, 29/00*

U.S. Cl. 62—480 **14 Claims**



1. A process for air conditioning comprising the steps: generating refrigerant by desorption from a solid adsorbent on the interior of a generator (adsorber) functioning as a generator by heating said generator while removing heat from a condenser in thermal insulated and valved communication with said generator causing said refrigerant to move in the vapor state to the condenser and to condense to a liquid state within the condenser; continuously expanding the liquid to an evaporator; then applying heat to said evaporator by passing an airstream to be cooled in thermal exchange relation to said evaporator cooling the airstream for introduction to the air conditioned space while removing heat from an adsorber (generator) functioning as an adsorber in thermal insulated and valved communication with said evaporator causing said refrigerant to vaporize and pass from the evaporator to the adsorber (generator) in the vapor phase and adsorb on said solid adsorbent on the interior of said adsorber which then becomes said generator (adsorber); and recycling said thermal condition sequence to provide desired conditioning to an air conditioned space.

4,138,862

COOLING APPARATUS

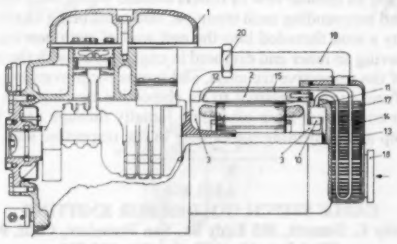
Arnold Müller, 31 Lichtensteinstrasse, Kirchheim/Teck, Fed. Rep. of Germany

Filed Oct. 8, 1976, Ser. No. 730,907

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2545304

Int. Cl.[2] F25B *39/04*

U.S. Cl. 62—508 **1 Claim**



1. A refrigerating apparatus comprising:

(i) an evaporator

(ii) a compressor

(iii) a condenser

(iv) means defining passages forming with the evaporator

and the compressor and the condenser a closed circuit containing a refrigerant fluid

(v) an induction motor coupled to and serving to drive the compressor, said motor having a stator and a rotor

(vi) a housing enclosing the stator and rotor

(vii) a heat exchanger

(viii) means defining passages forming with the housing and the heat exchanger a closed circuit containing a coolant liquid,

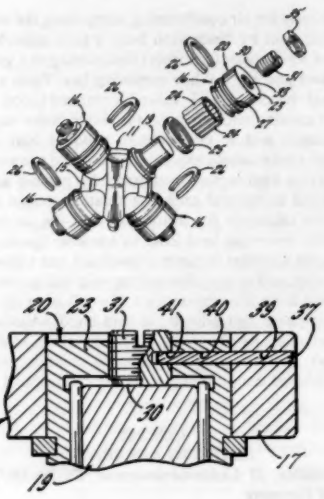
the evaporator and the heat exchanger being spatially disposed one adjacent the other such that heat transfer may take place from the heat exchanger to the evaporator.

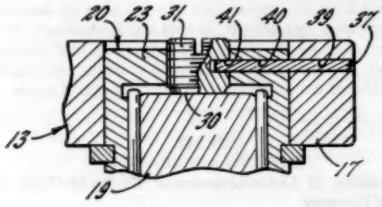
4,138,863

UNIVERSAL JOINT CROSS WITH ADJUSTABLE BEARING CUPS

Dean A. Olson, Sr., Rockford, Ill., assignor to Rockford Acromatic Products Co., Rockford, Ill.

Filed Aug. 25, 1977, Ser. No. 827,794
Int. Cl.² F16D *3/30, 3/26*
U.S. Cl. 64—17 A **1 Claim**





1. A universal joint cross having a central body, four trunnions spaced angularly around and extending outwardly from said body, a bearing cup telescoped over each trunnion and having an end wall located adjacent the outer end of the trunnion, and an annular row of rollers located within each bearing cup and surrounding each trunnion, said cross being characterized by a stud threaded into the end wall of each bearing cup and having an inner end disposed in engagement with the outer end of the respective trunnion, and means for preventing each stud from turning relative to its respective bearing cup, said means comprising a pin extending radially through each bearing cup and projecting into a hole in the respective stud.

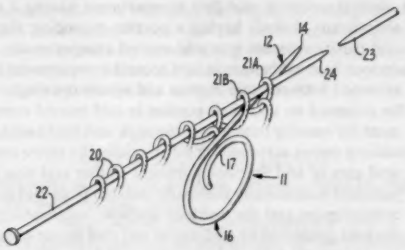
4,138,864

CABLE STITCH HOLDER FOR KNITTING

Dorothy L. Bennett, 555 Eddy St., San Francisco, Calif. 94109

Filed Jun. 13, 1977, Ser. No. 805,972
Int. Cl.² D04B *3/00*
U.S. Cl. 66—1 A **5 Claims**

1. A cable stitch holder for knitting, comprising an elongated straight shank having an end tapering to a blunt point, a continuation of said shank formed in a loop of more than 360 degrees, a portion of said loop curving back into closely spaced proximity to said shank, and an end portion of said loop having a curvature exceeding the curvature of the adjacent portion of said loop so as to diverge from the latter, whereby stitches



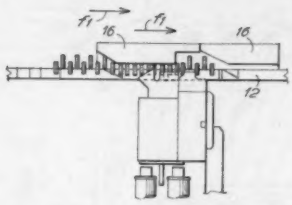
knitted onto said shank and forced past said loop portion are automatically held on said loop until pulled back onto said shank.

4,138,865

CIRCULAR KNITTING MACHINE HAVING A MULTIPLE SELECTION SYSTEM FOR THE NEEDLES

Claus-Peter Lüth, Emmingen, Fed. Rep. of Germany, assignor to Macchine Tessili Circolari Matec S.p.A., Scandicci, Italy

Filed Nov. 25, 1977, Ser. No. 854,744
Claims priority, application Italy, Nov. 29, 1976, 9682
Int. Cl.² D04B *15/78*
U.S. Cl. 66—219 **3 Claims**



1. In a circular knitting machine, a needle selection system, a needle cylinder, jacks having butts, said jacks being mounted on the needle cylinder for movement longitudinally of the needle cylinder and also for movement inwardly and outwardly with respect to the needle cylinder, and stationary cam means operative to move the jacks outwardly of the needle cylinder prior to selection, said selection system comprising a stack of selection cams operative to cause movement of selected jacks inwardly of the needle cylinder, lifting cam means downstream of the selection cams to raise those jacks which remain in a position outwardly of the needle cylinder, each said selection cam being a slider cam movable between an operative and inoperative position, resilient means operative to bias each slider cam into its operative position, electromagnetic means for retaining each selection cam in its inoperative position, each selection cam having means defining a thrust profile engageable by the butt of one of said jacks to thrust the selection cam towards its inoperative position, means defining a lowering profile engageable with said butt of said one jack to cause lowering thereof when the selection cam is in its operative position, and means defining a zone between the thrust profile and the lowering profile, said electro-magnetic means being operated during passage of said butt across the said zone between the thrust profile and the lowering profile, so as to determine the subsequent state of the selection cam, thrust cam means downstream of the selection cams to act on said butt of said one jack which has been lowered by the lowering profile of the selection cam and to thrust said jack inwardly relative to

the needle cylinder whereby said jack is excluded from being raised by the lifting cam means, and selectively operable means to provide an alternative manual selection.

4,138,866

YARN DELIVERY APPARATUS, ESPECIALLY FOR KNITTING MACHINES

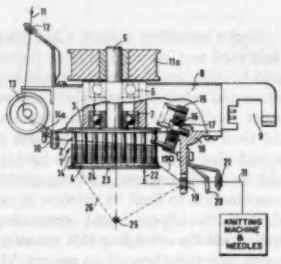
Josef Fecker, Bisingen-Steinhofen, and Gustav Memminger, Freudenstadt, both of Fed. Rep. of Germany, assignors to Firma Gustav Memminger-Verfanrenstechnik fur die Maschenindustrie, Freudenstadt, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,666

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2608590

Int. Cl.² D04B *15/48*; B65H *51/20*

U.S. Cl. 66—132 R **12 Claims**



1. Thread supply apparatus particularly for knitting machines having needles comprising

a rotatable thread supply drum (1) having a lower edge structure (24), and carrying a thread storage winding (14);

means (5, 11*a*) rotating the supply drum;

means (6-9) mounting said supply drum for rotation about a vertical axis;

thread supply means (10–13) guiding thread (11) to the drum (1) at an upper zone thereof to wind a plurality of storage windings (14) on the drum;

and pull-off guide means (19, 20, 21; 25) guiding thread being pulled off the drum from the lowest loop of the storage winding,

comprising

a thread guide eye element (19) fixed in position and located, with respect to the lower surface (23) of the lower edge structure (24) of the thread supply drum (1) laterally thereof and spaced therefrom, and therebelow, by a predetermined distance (22);

the thread guide eye element (19) having an opening to hold a thread (11) in essentially fixed position with repect to the lower edge structure (24) of the thread supply drum (1) and guide the thread with respect to a vertical direction, upwardly or downwardly, to restrain the thread from uncontrolled vertical movement;

and a pull-off element (25) located beneath the drum positioned in a general prolongation of the axis of the drum (1) and in a thread pull-off path between the thread supply drum and the thread guide eye element;

to permit selective removal of the threads from the drum (1)

(a) at a speed of thread pull-off corresponding to the speed of the thread supply through the guide eye element (19) located laterally next to, and below the thread supply drum (1) in a first thread path (190) bypassing the pull-off element (25) in its travel to the needles downwardly inclined over the lower edge structure (24) of the thread supply drum (1) and through the thread guide eye element (19); or

(b) at the speed determined by needle demand in a second thread path (26), over the lower edge structure (24) of the drum to the the pull-off element (25) end-over-end with respect to the lower edge structure (24) of the drum and then upwardly through the thread guide eye element (19).

4,138,867

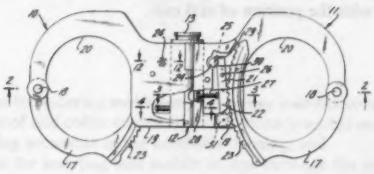
HINGED HANDCUFFS AND LOCK

Harry A. Tompkins, 7201 Cottage Ave., North Bergen, N.J. 07047

Filed Feb. 21, 1978, Ser. No. 879,451

Int. Cl.² E05B *75/00*

U.S. Cl. 70—16 **10 Claims**



1. Hinged handcuffs and lock comprising two wing sections operatively associated with each other by means of a hinge and hinge pin wherein said hinge pin functions as a locking mechanism and wherein one wing section has a top and bottom hinge ring rolled section formed as an integral part thereof and the other wing section has a center hinge ring rolled section formed as an integral part thereof and wherein said hinge pin-locking mechanism extends through said hinge ring rolled sections to hold said wing sections together further comprising a barrel end cap inserted upwardly into said bottom hinge ring section for holding said hinge pin-locking mechanism in place and wherein said hinge pin-locking mechanism comprises:

a. a lock sleeve;

b. a tumbler lock having an eccentric pin depending therefrom;

c. a bolt accuated by said eccentric pin;

d. a bolt guide for supporting and guiding said bolt;

e. a stop pin assembly for limiting upward movement of said bolt guide by means of a cross pin engaging the bottom of said bolt guide;

f. a compression spring to urge said bolt guide upwardly and,

g. an anchor pin for insertion through an aperture formed in said bottom hinge ring section and through said stop pin assembly to hold said hinge pin-locking mechanism in place.

4,138,868

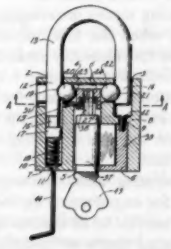
REPLACEABLE CYLINDER PADLOCK

Frederick F. Richards, Sr., 6837 Chevy Chase, Dallas, Tex. 75224

Filed Aug. 19, 1977, Ser. No. 826,021

Int. Cl.² E05B *67/22*

U.S. Cl. 70—38 A **3 Claims**



1. In a padlock comprising a body having a pair of parallel recesses therein and having a pair of parallel bores therein, one of said recesses and one of said bores communicating by means

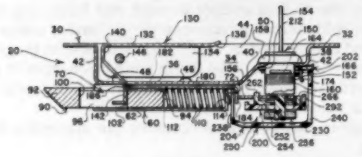
of a countersunk hole, a shackle having a toe end with notch receivable in said one recess and having a heel end with notch receivable in the other recess, a lock cylinder unit receivable in said one bore and a lock cylinder retaining means receivable in the other bore, a rotatable cam in said one bore and movable by lock cylinder means, a pin extending through a wall of said body and engaging a spring member fitted into a cavity in said rotatable cam, said pin acting to retain said rotatable cam and said spring within said one bore, a pair of ball members each interposed between said cam and a shackle end and respectively movable into or out of shackle and notches in accordance with the position of said cam.

4,138,869

SELF-LOCKING KEY-CONTROLLED DOOR LOCK

Albert L. Pelcin, Aurora, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Sep. 26, 1977, Ser. No. 836,784
Int. Cl.² E05B *55/02*
U.S. Cl. 70—151 R **16 Claims**



10. In a self-locking mechanism for a lock of the type having a bolt retractable by handle operation to an unlatching position, a handle movable with the bolt between latching and unlatching positions, and means for selectively permitting and preventing handle movement to retract the bolt, the improvement comprising:

(a) a movable actuating member having an abutment surface and being movable with operation of the handle and the bolt in an unlatching direction;

(b) a first operating means being movable between a locked position engaging the abutment surface of the actuating member to prevent its movement in the unlatching direction, and an unlocked position out of engagement with the abutment surface wherein the first operating means permits movement of the actuating member in the unlatching direction;

(c) first independent spring means urging the first operating means toward its locked position;

(d) a second operating means interengageable with the first operating means when the first operating means is in its unlocked position for releasably retaining the first operating means in its unlocked position;

(e) second independent spring means for urging the second operating means into interengagement with the first operating means when the first operating means is in its unlocked position; and,

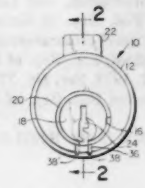
(f) the second operating means having a striker surface formed thereon for engagement by the abutment surface as the handle is moved to its operating position to move the second operating means sufficiently to release interengagement between the first and second operating means and to thereby free the first operating means to return to its locked position under the influence of the first spring means.

4,138,870

LOCK CYLINDER PLUG STOP

Armand C. Poirier, Windsor, Conn., assignor to Emhart Industries, Inc., Hartford, Conn.

Filed Jul. 11, 1977, Ser. No. 814,208
Int. Cl.² E05B *15/00*
U.S. Cl. 70—372 **10 Claims**



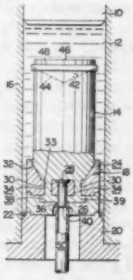
1. In a lock cylinder including a shell, a key plug supported for rotation in said shell and having a keyway therein, a key for insertion into said keyway and for rotating said key plug from a key shed position and relative to said shell, and an elongated wire stop member having one end portion retained in fixed position by said shell and an elongated arcuate portion disposed between said plug and said shell and having a free end angularly spaced from said one end and engageable with said key plug-key combination to limit its rotation in one direction relative to said shell, the improvement comprising said shell having a generally radially extending slot opening outwardly in a generally axial direction through an associated end of said shell, said one end portion extending outwardly in a generally radial direction from the end of said arcuate portion opposite said free end and being received within said slot and retained by said slot in fixed position relative to said shell.

4,138,871

LIQUID PRESSURE EXTRUSION METHOD AND DEVICE FOR TUBE OR TUBULAR MEMBER

Hideo Kawano; Sadahiko Mitsugi; Oelhschläigel Dietrich, and Kenkichi Yamaji, all of Hitachi, Japan, assignors to Hitachi Cable, Ltd., Japan

Continuation-in-part of Ser. No. 620,702, Oct. 8, 1975, abandoned. This application May 26, 1977, Ser. No. 800,873
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 **26 Claims**



1. A liquid pressure extrusion method for producing a tube or tubular member, comprising the steps of: bringing a solid billet, being pressed under a liquid pressure, into abutment with a billet receiving surface and then with a flat portion of a primary die portion, said flat portion extending transversely with respect to the direction of extrusion at the end of said billet receiving surface; introducing said billet separately through a plurality of port-holes or communicating holes downstream in the direction of extrusion with respect to said flat portion leading to a secondary die portion; and then ex-

truding said billet into a tube through a gap defined between a depending end portion of a fixed type short mandrel supported by said primary die portion and a die hole formed in a flat bottom of said columnar cavity of said secondary die portion.

4,138,872

METHOD AND APPARATUS FOR EXTRUSION

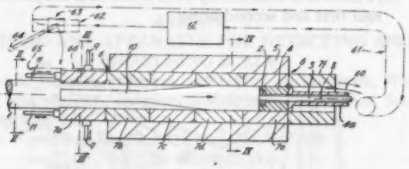
Bela Lengyel, Twickenham, England, assignor to National Research Development Corporation, London, England

Filed Jan. 4, 1977, Ser. No. 756,796

Claims priority, application United Kingdom, Jan. 6, 1976, 00262/76; Sep. 17, 1976, 38615/76

Int. Cl.² B21C *23/04, 25/06*

U.S. Cl. 72—262 **23 Claims**



1. Apparatus for forming material comprising:

an elongated hollow container having an inlet end and an outlet end;

means for exerting a forming force upon said material to urge said material through the container and to expel said material from the outlet end after formation;

a plurality of sets of abutting passage-forming members mounted for endwise movement through the container, each set being circumferentially complete and the plurality of sets forming the complete inner surface of the container so that said material within the container is completely surrounded within the passage so formed, the members of each set engaging with each other so that by relative movement the members change the section of the passage enclosed therein while maintaining circumferential completeness;

means for urging a first set of members disposed at said inlet end of said container against said material, so as to compact and diminish said material in cross-section;

reciprocable drive means for imparting endwise driven movement through the container to at least some of said movable members, and through some of the moveable members to the remainder of said members and to said material through contact between said members and said material wherein continuous motion is maintainable, and,

means to re-cycle said members back to the inlet end of said container from the outlet end.

4,138,873

TOOL FOR FORMING RECTANGULAR CROSS-SECTIONAL CONDUIT ENDS

George F. Dailey, Plum Borough, and James S. Koroly, North Huntingdon Township, Huntingdon County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1978, Ser. No. 875,669

Int. Cl.² B21D *39/08*

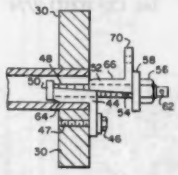
U.S. Cl. 72—316 **7 Claims**

1. An apparatus for shaping rectangular crosssections on conduit end portions, said apparatus comprising:

two mateable collar members each having a notch in its mateable edge, said notches cooperating during collar member assembly to form a substantially rectangular opening which is bounded by forming surfaces;

means for compressively engaging said collar member's forming surfaces against a conduit's outer periphery;

an operationally stationary wedge member and an operationally mobile wedge member each of which has a forming surface, said forming surfaces being engageable with the conduit's inner periphery during insertion of said wedge members in the conduit's opening, said wedge members having surfaces which are slidably mateable along a parting plane;



means for securing said stationary wedge member to at least one of said collar members, said stationary wedge member being securable in the conduit's opening; and

means for inserting said mobile wedge between the stationary wedge member's mateable surface and the inner periphery.

4,138,874

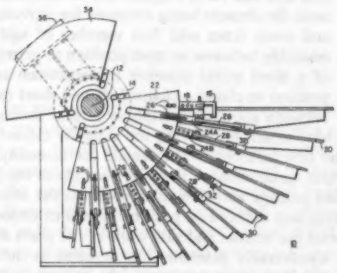
ADJUSTABLE CONE MEMBER FOR ELECTRICAL COIL FORMATION

Mark Kolesar, North Huntingdon, and Harry C. Rettger, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 23, 1978, Ser. No. 880,269

Int. Cl.² B21D *7/04;* **H02K** *15/00*

U.S. Cl. 72—306 **8 Claims**



1. An apparatus for forming electrical coil bars for dynamoelectric machines, said apparatus comprising:

means for bending a first end portion of a coil bar at selected angles to an adjacent coil bar portion;

a first rotatable member of frusto-conical shape whose axis of rotation is substantially parallel to the coil bar's adjacent portion, said frusto-conical member having a cone angle whose magnitude is adjustable to any of said selected bending angles;

means for rotating said first rotatable member through selected angular displacements; and

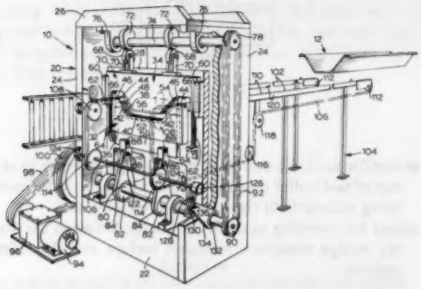
means for guiding the coil bar's first end portion against the conical surface of said frusto-conical member in a spiral configuration about the axis of rotation during said angular displacement of said frusto-conical member.

4,138,875

SHEET METAL BENDING MACHINE

Peter E. Hooper, Burlington, Canada, assignor to Arnold Davis, Toronto, Canada

Filed Nov. 28, 1977, Ser. No. 855,174
Int. Cl.[2] B21D 9/14
U.S. Cl. 72—307 6 Claims



1. A bending machine for bending longitudinally elongated channel-shaped sheet metal members comprising,

(a) a frame,

(b) a die set mounted in said frame comprising;

(i) a female die assembly comprising, a first member having a first die face formed to provide a bottom face and side faces arranged in a female channel configuration to provide exterior support for a channel-shaped sheet metal member, a passage formed in said first member and opening at said die face through said bottom and side faces; and a second member mounted for movement relative to said first member and having a bending edge movable between an extended position in which it projects outwardly from said first die face through said passage and a withdrawn position in which it does not project beyond said first die face,

(ii) a male die element having a second die face formed with bottom and side faces arranged opposite said bottom and side faces respectively of said female die, said male die element being mounted for movement towards and away from said first member of said female die assembly between an open position to permit movement of a sheet metal member therebetween and a closed position to clamp a channel-shaped sheet member there between about the periphery of said passage,

(c) drive means for driving the male die element relative to the first member of the female die assembly to clamp a sheet metal member therebetween about the periphery of said passage and thereafter to drive the second member from said withdrawn position to said extended position to bend the bottom and side walls of the sheet metal to form a transversely extending corrugation in the sheet metal member and thereby shorten the bottom wall of the sheet metal member in relation to the outer ends of its side walls and thereby bend the sheet metal member in the direction of its longitudinal extent.

4,138,876

TRUCK FRAME ALIGNMENT APPARATUS

Finis L. Chisum, P.O. Box 1145, Claremore, Okla. 74017

Filed Aug. 2, 1976, Ser. No. 710,437
Int. Cl.[2] B21D 1/14
U.S. Cl. 72—457 9 Claims

1. Hydraulic crane, and apparatus for operating on a truck frame object by said hydraulic crane comprising;

(a) a frame means supporting at least one set of tracks which at least partially surround the central portion of the frame upon which said object can be positioned;

(b) at least one hydraulic crane adapted to run along said set of tracks, and to be positioned at a selected point along said tracks, said crane comprising;

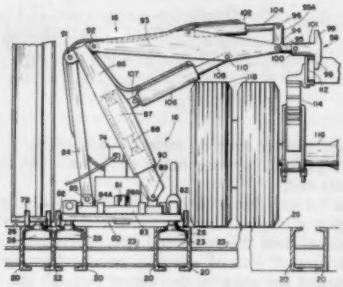
(1) a base plate, adapted to roll along said tracks;

(2) a rotatable means, including a table means rotatably supported on said base plate;

(3) a first arm of fixed length pivotally attached at a first end to said rotatable means;

(4) a second arm formed of first and second portions, one end of each portion telescopically movable relative to the other, the other end of said first portion pivotally attached to said rotatable means and the other end of said second portion pivotally attached to said first arm at its second end, first hydraulic cylinder and piston means to extend or retract said second portion of said second arm means;

(5) a third arm attached by its first end near the junction of said first and second arms;



(6) second hydraulic cylinder and piston means connected between said second portion of said second arm means and said third arm, whereby the second end of said third arm can be raised or lowered by said second cylinder and piston means;

(7) means on the second end of said third arm to couple said third arm to said object; and

(8) control means to operate all of said hydraulic means;

(c) means to lock said baseplate to said tracks;

(d) said rotatable table means including second roller means adapted to support said table for rotation under load of below a selected value of load, about a vertical axis, on said baseplate means; and wherein

said rotatable table means includes spring means supporting said table means above said baseplate, such that when the load on said crane is greater than a selected value, said spring means will compress, and said rotatable table will be supported directly by said base plate means.

4,138,877

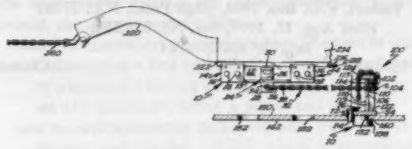
ACCESSORIES FOR AN APPARATUS FOR REPAIRING AND STRAIGHTENING

Gerald A. Specktor, 409 Cleveland Ave., South, St. Paul, Minn. 55105

Continuation of Ser. No. 550,378, Feb. 18, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 722,825
Int. Cl.[2] B21D 1/14, 11/22
U.S. Cl. 72—461 84 Claims

1. Apparatus for anchoring a vehicle, having a unibody type construction including at least one pinch type weld, to a support surface comprising, in combination: an elongated clamp member for grasping the pinch type weld of the unibody of the vehicle including adjustable jaw members along an axis for removably capturing the pinch type weld; means for accepting a counterforce from the clamp member in a substantially horizontal manner to substantially reduce the necessity for use of supporting apparatus in straightening the frame of the vehicle;

and means, for rotation about a vertical axis, for attaching the accepting means to the support surface, for allowing rotational



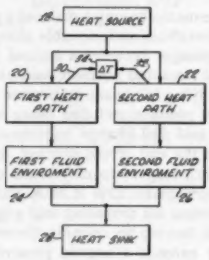
self-alignment of the accepting means about the vertical axis, and for allowing the accepting means to be substantially in line with the counterforce of the clamp member.

4,138,878

METHOD AND APPARATUS FOR DETECTING AND MEASURING SCALE

Elmond A. Holmes, Fullerton, and Gilson H. Rohrback, Whittier, both of Calif., assignors to Rohrback Corporation, Santa Fe Springs, Calif.

Filed Dec. 3, 1976, Ser. No. 747,426
Int. Cl.² G01N *25/00*
U.S. Cl. 73—15 R **49 Claims**



1. A method of testing a fluid environment for a propensity to deposit foulant upon a surface immersed therein comprising,

subjecting a test surface to said fluid environment whereby foulant may be deposited thereon, subjecting both a reference surface and said test surface to fluid environments having a known relation of heat flow parameters,

subjecting said reference surface to said first mentioned fluid environment during said first mentioned step,

varying the propensity of said first mentioned fluid environment to deposit foulant upon said test surface relative to its propensity to deposit foulant upon said reference surface during said first mentiond step,

transferring heat between said surfaces and their respective fluid environments, and

comparing the heat transfer characteristics of said surfaces adjacent their respective fluid environments.

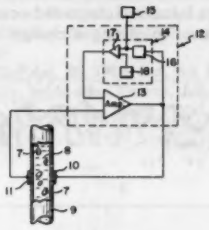
4,138,879

SIGHTLESS BUBBLE DETECTOR

Leonard N. Liebermann, La Jolla, Calif., assignor to Tif Instruments, Inc., Miami, Fla.

Filed Aug. 22, 1977, Ser. No. 826,689
Int. Cl.² G01N *29/02*
U.S. Cl. 73—19 **15 Claims**

1. A device for detecting inhomogeneities in a fluid within a conduit comprising: a pair of electromechanical transducers for disposition on such conduit in an acoustically coupled relationship; adjustable gain driving amplifier means responsive to the electrical output of one of said transducers for providing a driving signal for driving the other of said transducers; automatic gain control circuit means connected to the output and at least one input of said driving amplifier means for automatically adjusting the gain of said driving amplifier to maintain said transducers and said amplifiers at a predetermined operating point; and indicating circuit means connected



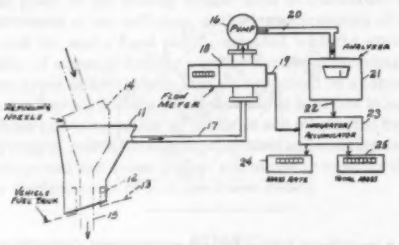
to said amplifier for indicating changes in said driving signal caused by an inhomogeneity in said fluid moving past said transducers.

4,138,880

VAPOR EMISSION RECOVERY AND MEASURING METHOD AND VAPOR RECOVERY COLLECTION BOOT

Jules B. Cohen, Lakewood, Colo., and Peter P. Principe, Columbia, Md., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed May 27, 1977, Ser. No. 801,443
Int. Cl.² G01N *31/00*
U.S. Cl. 73—23 **14 Claims**



1. A boot for use in a testing apparatus to measure vapor emission from the interface region between a dispensing nozzle and the neck of a liquid storage container, said boot being adapted to be placed over the container neck and to surround and receive the nozzle without being connected in sealed engagement therewith, said boot comprising a sleeve-like member, open at both ends, having a hollow peripheral wall defining a vapor collection chamber, said hollow wall comprising an inner wall element and an outer wall element, the inner wall element being provided with holes substantially uniformly distributed over the surface area thereof, and conduit receiving means for permitting a conduit to connect with the boot to convey collected vapor from said collection chamber to an analyzing means.

4,138,881

RESISTOR-TYPE SOLID ELECTROLYTE OXYGEN SENSOR

Arnold O. Isenberg, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1978, Ser. No. 874,187
Int. Cl.² G01N *27/12*
U.S. Cl. 73—27 R **5 Claims**

1. An oxygen measuring apparatus, comprising,

an oxygen sensor means including an oxygen ion conductive

solid electrolyte member and a porous cermet layer disposed in intimate contact with the surface of said oxygen ion conductive solid electrolyte member, said cermet layer including a metallic skeleton and a ceramic skeleton, said oxygen sensor exhibiting a change in resistance in

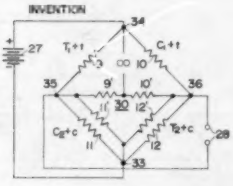
response to a change in the oxygen partial pressure of a gas environment contacting said oxygen sensor, and circuit means connected to said cermet layer to manifest said change in resistance as an indication of the oxygen partial pressure of a gas environment contacting said oxygen sensor.

4,138,882

TRANSDUCER BRIDGE CIRCUIT ARRANGEMENT

Harry E. Lockery, Sudbury, and Harold O. Ballou, Framingham, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Natick, Mass.

Filed Apr. 6, 1978, Ser. No. 894,156
Int. Cl.[2] G01B 7/16
U.S. Cl. 73—767 **4 Claims**



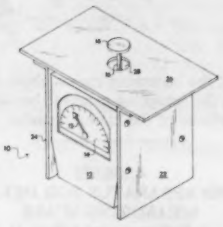
1. In a transducer bridge circuit arrangement comprising at least two individual bridge circuits each of which includes its respective strain gauges, means connecting said bridge circuits in parallel to each other, common power input terminals and common measured signal output terminals forming part of said parallel connected bridge circuits, and resistance means conencted in series with the respective power input terminals of the corresponding bridge circuit for adjusting the relative sensitivity of each individual bridge circuit, the improvement wherein each individual bridge circuit comprises a plurality of strain gauge means which sense tensile strains, compressive strains, or mixed tensile and compressive strains, and wherein one of said common power input terminals (34) is operatively connected on one side to tension only sensing strain gauge means (9, 9') while the other common power input terminal (33) is operatively connected on one side to compression only sensing strain gauge means (11, 11'), whereas the other side of both power input terminals (33,34) is operatively connected to mixed strains sensing strain gauge means (10, 10'; 12, 12'), and wherein one of said common measured signal output terminals (35) is operatively connected between tension only and compression only sensing strain gauge means (9, 9'; 11, 11'), whereas the other common measured signal output terminal (36) is operatively connected between mixed strains sensing strain gauge means (10, 10'; 12, 12'), whereby the relative sensitivity of each individual bridge circuit may be adjusted substantially without interaction among said individual bridge circuits.

4,138,883

PORTABLE DEVICE FOR MEASURING 25 PERCENT R.M.A. COMPRESSION VALUES

Miles E. Talbert, P.O. Box 1901, High Point, N.C. 27260

Filed Aug. 15, 1977, Ser. No. 824,358
Int. Cl.[2] G01N 3/14
U.S. Cl. 73—818 **3 Claims**



1. A portable device for determining approximate 25% R.M.A. compression values of a compressible material without requiring movement of the test piece or separation of any portion of the material from the remainder, said device comprising:

(a) a strain gage means having a dial and a plunger extending outwardly therefrom and movable along the longitudinal axis of the plunger between a normal extended position and a second retracted position, said plunger terminating in a flat disc lying in a plane transverse to the axis of said plunger, said plunger and dial being so connected that readings on said dial change responsive to the force exerted against the end of the plunger, indicia on said dial calibrated with respect to movement of said plunger to represent approximate 25% R.M.A. values;

(b) a bracket means for mounting said gage and including a flat end plate having an opening therein through which said plunger extends a normal prescribed distance, the plane of said disc being parallel to the plane of said end plate; and

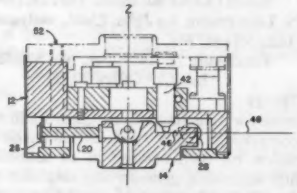
(c) said bracket means with said gage therein being of such size as to be easily carried in a workman's hand, whereby when said gage is urged against a compressible material in any direction, readings representative of 25% R.M.A. compression values accurate to within ±5% are visible on said dial.

4,138,884

MULTI-AXIS LOAD CELL

Carl F. Ruoff, Jr., Dayton, Ohio, and James J. Edmond, Southfield, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 789,032, Apr. 20, 1977, Pat. No. 4,092,854, which is a continuation of Ser. No. 615,852, Sep. 23, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 839,072
Int. Cl.[2] G01L 5/16
U.S. Cl. 73—133 R **3 Claims**



1. In combination with a load cell of the type having a housing, a hub disposed within the housing and movable relative to the housing, deflectable means for yieldably connecting

the hub and housing, and first and second transducer means for measuring relative displacement between the housing and the hub and generating signals corresponding thereto, whereby the load exerted through the deflectable means may be determined, the improvement wherein:

said first transducer means including a first set of transducers for engaging a first surface of the hub, each of said first set of transducers having an axis, wherein the axes of said first set of transducers define a plane; and wherein

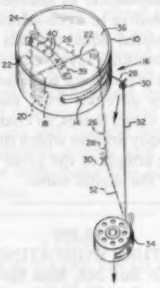
said second transducer means includes a second set of transducers, each having an axis which is transverse to said plane defined by the axes of said first set of transducers, said second set of transducers engaging a second hub surface which is also disposed in said plane.

4,138,885

GAGE FOR SETTING SEWING MACHINE BOBBIN TENSION

Vernon S. Moore, P.O. Box 676, Hines, Oreg. 97738

Filed Nov. 10, 1977, Ser. No. 850,392
Int. Cl.[2] G01L *5/12*
U.S. Cl. 73—141 AB **4 Claims**



1. A device for gaging the force required to unspool thread from a sewing machine bobbin comprising:

(a) a case, defining a side opening therein;

(b) tensioning means mounted substantially within said case, and having an extremity portion projecting outwardly from said case through said opening, for measuring the amount of force required to unspool said thread from said bobbin;

(c) gripping means associated with said extremity portion of said tensioning means for releasably engaging said thread;

(d) indicating means associated with said tensioning means for indicating the amount of said force;

(e) display means associated with said indicating means for displaying the amount of said force;

(f) wherein the tensioning means and indicating means are integral and comprise;

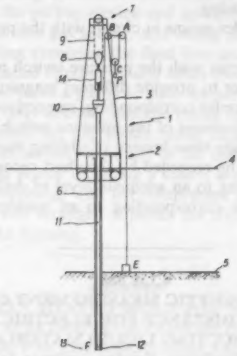
1. a length of spring wire,
2. a coiled section located at one end of said wire in a manner to form a spiral spring,
3. a straight indicator section located in said wire adjacent to said coil section,
4. a straight extension section located in said wire adjacent to said indicator section and oriented at an acute angle therewith, and
5. a looped section interconnecting said indicator section and said extension section in a manner to allow angular deflection therebetween.

4,138,886

METHOD AND APPARATUS TO MEASURE THE RATE OF ADVANCE OF A DRILLING TOOL ON A FLOATING DRILLING INSTALLATION

Jean Lutz, Pau, and François Besnard, Lescar, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jul. 26, 1977, Ser. No. 819,041
Claims priority, application France, Jul. 30, 1976, 76 23397
Int. Cl.[2] E21B *47/00*
U.S. Cl. 73—151 **8 Claims**



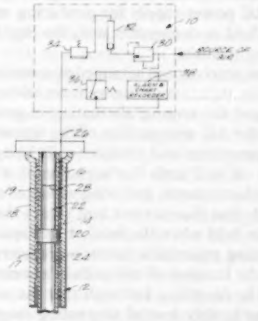
7. Apparatus for measuring the rate of advance of a drill bit, on a floating drilling installation, comprising a linkage between one point of the drilling system fixed in translation with the movement of the drill stem, at the lower extremity of which is a drill bit, and a fixed point connected with the ground by a cable of constant length, a pulley system comprising at least two upper pulleys whose axes are supported by a support fixed to the floating drilling installation and at least one lower pulley whose axis is moveable by the cable and is ballasted by a counterweight, said cable extending around and rotating said upper pulleys and said lower pulley, and means to measure the angular displacements of said one lower pulley.

4,138,887

DRILLING MUD LEVEL MONITOR AND ALARM

Robert W. Logan, Calgary, Canada, assignor to Chimo Equipment Ltd., Calgary, Canada

Filed Dec. 5, 1977, Ser. No. 857,789
Int. Cl.[2] E21C *1/00*
U.S. Cl. 73—151 **9 Claims**



1. An improvement in drilling mud monitors for drilling mud in petroleum wells being drilled comprising:

(a) means for supplying a stream of air into a casing contain-

ing drilling mud at a predetermined level below the ground, such means including a line adapted to be connected to a source of air under pressure;

(b) valve means in the line to adjust the flow of air through the line;

(c) means in the line to indicate visually the rate of flow of air through the line;

(d) pressure switch means in the line responsive to a predetermined low pressure therein to switch between a first position and a second position, the predetermined low pressure corresponding to an inadequate level of drilling mud in the casing;

(e) chart recorder means in circuit with the pressure switch means;

(f) means in circuit with the pressure switch means and the chart recorder to provide different magnitude signals to the chart recorder corresponding, respectively, to the first and second positions of the pressure switch;

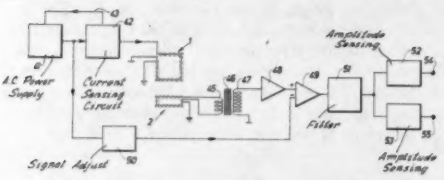
whereby, a pressure time history of drilling mud in the well being drilled will be recorded by the chart recorder with one trace corresponding to an adequate level of drilling mud and an alternate trace corresponding to an inadequate level of drilling mud.

4,138,888

ELECTROMAGNETIC MEASUREMENT OF LEVEL AND/OR DISTANCE FOR ELECTRICALLY CONDUCTING LIQUID MATERIAL

Sten V. Linder, Tystberga, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed May 17, 1977, Ser. No. 797,656
Claims priority, application Sweden, May 20, 1976, 7605760
Int. Cl.[2] G01F *23/00*
U.S. Cl. 73—290 R **21 Claims**



20. An arrangement for electro-magnetically measuring at least one of level and distance in connection with liquid electrically conducting material contained in a container, particularly electrically conducting molten material of a very high temperature, such as molten metal, comprising:

an AC power supply;

a separate transmitter coil arranged in association with the wall of the container and arranged to be energized from said AC power supply for producing an alternating magnetic field in connection with the liquid electrically conducting material;

a separate receiver coil arranged in accordance with the wall of the container at a distance from said transmitter coil and arranged for sensing alternating magnetic field deriving from the AC energization of the transmitter coil;

said transmitter and receiver coils being coreless, at least one of said coils having at most a small number of conductor turns, and being arranged relative each other such that the receiver coil senses the alternating magnetic field when the level of the liquid electrically conducting material is below a predetermined level given by the location of said coils in association with the wall of the container and such that the receiver coil senses considerably less of alternating magnetic field due to the screening effect of the liquid electrically conducting material when the level of the material exceeds the predetermined level;

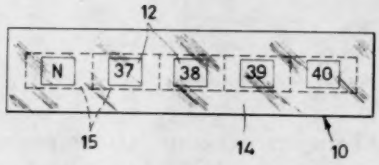
and signal processing means connected to the receiver coil for detecting and processing AC signals inducted in the receiver coil by said alternating magnetic field.

4,138,889

READY-READING, LIQUID-CRYSTAL-DISPLAY THERMOMETER

Mario Fraschini, Varese, Italy, assignor to Laboratorio Farmacologico Milanese S.n.c., Caronno Pertusella (Varese), Italy

Filed Apr. 13, 1978, Ser. No. 895,977
Claims priority, application Italy, Apr. 26, 1977, 21200/77[U]
Int. Cl.[2] G01K *11/18*
U.S. Cl. 73—356 **2 Claims**



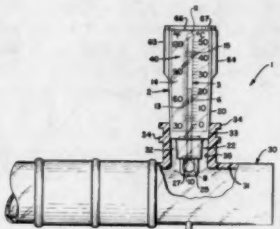
1. A thermometer for clinical use, of the type comprising a supporting member of a transparent plastics material, having windows in correspondence with which digital indications are applied which can be viewed by transparency, each window being coated by a composition of microencapsulated cholesteric liquid crystals sensitive to a pre-selected temperature, the layer of microencapsulated liquid crystals being coated, in its turn, by a very dark masking layer, characterized in that the compositions of liquid crystals are so preset as to change their state at a temperature different from that indicated by the digital corresponding value, that is, to change their state at the temperature that the body area on which the readings are taken actually has when the armpit or the groin region has the temperature displayed by the digital value.

4,138,890

TEMPERATURE INDICATING PROBE

Joseph W. Brown, P.O. Box 385, Blue Springs, Mo. 64015

Filed Jun. 3, 1977, Ser. No. 803,030
Int. Cl.[2] G01K *1/08, 1/14, 13/02*
U.S. Cl. 73—374 **3 Claims**



1. A temperature responsive device for single patient use in measuring and indicating the temperature of a working fluid flowing in a patient care appliance from a source thereof, through a passage in a transmitting member to a patient, said device comprising:

(a) a fitting member connected with said transmitting passage and having a tubular portion thereof extending laterally from said transmitting member, and including an open end thereof communicating with the passage in said transmitting member; said tubular portion having a smooth, frusto-conically shaped inside surface tapering outwardly toward the open end thereof;

(b) a one-piece elongated housing of synthetic resin having a first portion adjacent one end thereof with an outside surface including a smooth, frustroconical shape which is tapered inwardly toward said one end, and mates with said tapered inside surface of said tubular portion and cooperates therewith to provide a non-threaded, rotatably engaged, frictional force fit to secure an airtight seal with said one end, which extends adjacent to said passage, and contacts the working fluid therein;

(c) said housing having a second portion thereof extending from said first portion to an other end; said housing having walls defining a first chamber extending from an open end at the other end of said second portion to adjacent the housing first portion, and a second chamber communicating with said first chamber and extending therefrom in said first housing portion and terminating in a closed end adjacent said one end of the housing;

(d) said housing walls having rib members on an exterior side of the second portion, and extending longitudinally therealong for gripping and rotatingly inserting and frictionally retaining said housing with said fitting to form said airtight seal;

(e) said housing walls defining said second chamber having opposed guide portions on the interior thereof and extending substantially the length of said first chamber;

(f) a liquid thermometer having a bulb portion thereof disposed in said second chamber in contact with inner surfaces adjacent said closed end, whereby the temperature of said working fluid is detected by said thermometer; and

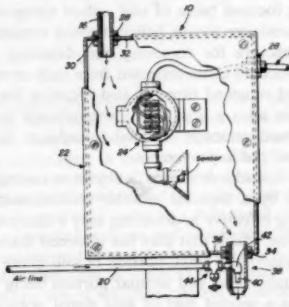
(g) said thermometer includes a planar scale member having numeral indicia thereon; said scale member being connected to the thermometer in spaced apart relation to said bulb and having side edge portions slidably engaged in said guide portions to position said thermometer and scale member in facing relation to one side portion of the housing walls; said one side portion being transparent and shaped with contoured interior and exterior surfaces to form an elongate magnifying lens portion for enlarging said numeral indicia.

4,138,891

SAMPLING OF TOXIC GASES FROM OIL AND/OR GAS WELLS

Phillip H. Graves, P.O. Box 6564, and Don L. Dyer, 2905 Eastover, both of Odessa, Tex. 79762

Filed Apr. 19, 1977, Ser. No. 788,900
Int. Cl.[2] G01N *1/22*
U.S. Cl. 73—421.5 R **2 Claims**



1. Apparatus for sampling of toxic gases from oil and gas wells, comprising, in combination:

(a) a gas sensing assembly arrangeable remotely of a wellhead emitting gases to be sampled;

(b) a gas pickup device arrangeable immediately adjacent the wellhead;

(c) a feed line connecting the pickup device to the gas sensing assembly; and

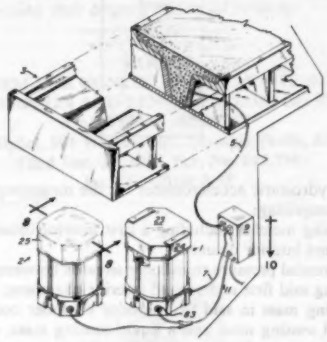
(d) pump means for drawing gas through the line from the pickup device to the gas sensing assembly, the pump means including a compressed gas line communicating with the flow of gas through the feed line for creating a suction through the feed line and drawing the gas from the pickup device to the gas sensing assembly, the gas sensing assembly including a hermetically sealed housing and a gas sensor disposed centrally within the housing, the housing having a diameter substantially larger than the line from the pickup device and an interior substantially larger than the gas sensor, and being provided with an inlet opening receiving the feed line and with an outlet opening spaced opposite of and offset from the inlet opening so as to form a gas flow path within the housing between the inlet opening and the outlet opening and over the gas sensor the gas sensor being disposed within the housing substantially centrally of the interior of the housing, the gas sensor including a sensor arranged closest to the outlet opening, with the compressed gas line having a discharge and arranged adjacent the outlet opening provided in the housing.

4,138,892

ELECTRICALLY HEATED MOLD FOR MAKING TEST SPECIMENS OF CONCRETE

George B. Davis, P.O. Box 1096, Boulder, Colo. 80302

Filed Jun. 22, 1977, Ser. No. 808,881
Int. Cl.[2] B41B *11/54;* G01N *25/02*
U.S. Cl. 73—432 SD **34 Claims**



1. A mold for making test specimens, said mold comprising:

two substantially identical mold members, each of said mold members having first and second end portions spaced from each other and a recessed mold surface with a first portion extending between said first and second end portions, each of said first portions of said mold surfaces having two substantially parallel edges extending in a direction between said first and second end portions of the respective mold member and defining boundaries of said first portion of each mold surface, said mold surface of each mold member further having a second portion connected to said first portion of said mold surface adjacent said first end portion of each mold member, each of said second portions of said mold surfaces having an edge extending between said two edges of the first portion of each respective mold surface and defining a boundary of said second portion of each mold surface,

means operably connected to each of said first end portions of said mold members for pivotally mounting said mold members to each other about a pivotal axis, said mold members being movable about said pivotal axis between a predetermined open position and a closed position, said edges of said first portion of the mold surface of one mold

member and said edge of said second portion of the mold surface of said one mold member abutting the corresponding edges of the other mold member in said closed position to define an open-ended shape, and,

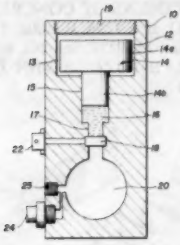
means for preventing movement of said mold members about said pivotal axis beyond said predetermined open position, said preventing means including a first pair of substantially identical stop members, each of said stop members being positioned on the first end portion of each respective mold member, said stop members being spaced from said pivotal axis and abutting each other at a first predetermined location as said mold members are moved about said pivotal axis away from said closed position to define said predetermined open position of said mold members.

4,138,893

HYDROSTATIC ACCELEROMETER

Allen B. Holmes, Rockville, and Stacy E. Gehman, Takoma Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1977, Ser. No. 858,982
Int. Cl.[2] G01P *15/08*
U.S. Cl. 73—516 LM **6 Claims**



1. A hydrostatic accelerometer for the measurement of "*g*" forces comprising:

a housing member including a first interior chamber and a second interior chamber;

a differential pressure transducer situated between and separating said first and second interior chambers;

a sensing mass in said first interior chamber comprising a solid sensing mass and a liquid sensing mass, said liquid sensing mass abutting said differential pressure transducer;

a low density fluid in said second interior chamber; and

means for adjusting the pressure in said second chamber.

4,138,894

TRANSVERSAL ACOUSTIC WAVE OPERATING DEVICE

André Robert, Paris, and Jean Rouge, Montrouge, both of France, assignors to L'Electroniqué Appliquee, Montrouge, France

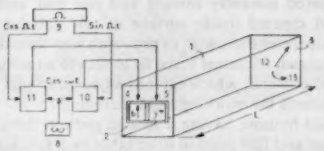
Filed Dec. 12, 1975, Ser. No. 640,321
Claims priority, application France, Dec. 16, 1974, 74 41311; Nov. 28, 1975, 75 36446
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—625 **11 Claims**

1. A transversal acoustic wave device for measuring anisotropy in an acoustically active substance of medium comprising:

an elongated body of isotropic material having parallel end faces;

a pair of transducers positioned on one only of said end faces, for launching acoustic waves in said body or for converting acoustic waves otherwise introduced into said body into electrical signals;

said body being of sufficient length that when said transducers are driven by a pair of signals of ultrasonic frequency modulated by low frequency in quadrature phase relation, the acoustic signals in said body can vectorially combine



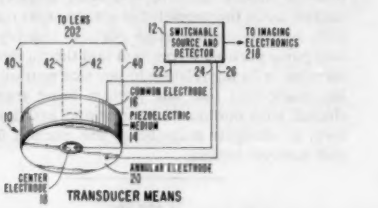
to form a constant amplitude wave rotating at the speed of the modulating frequency.

4,138,895

SWITCHABLE DEPTH OF FOCUS PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

Reuben S. Mezrich, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1977, Ser. No. 844,140
Int. Cl.[2] G01N *9/24*
U.S. Cl. 73—626 **6 Claims**



1. In apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus including an acoustic focusing lens occupying a given aperture, and ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing lens with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from said internal structure for receiving and detecting a signal portion of said focused beam reflected from said certain internal structure and returned through said focusing lens to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and internal structure; the improvement:

wherein said transducer means includes a central section surrounded by a separate annular section, said central section being effective in detecting only a first part of said signal portion which first part has returned through only a predetermined size small portion of said given aperture of said focusing lens, said annular portion being effective in detecting a second part of said signal portion which second part has returned through the remainder of said given aperture of said focusing lens, and said transducer means further includes switch means coupled to said central and annular sections for selectively utilizing said first part of said detected signal portion alone or utilizing together both said first and second parts of said detected signal portion.

4,138,896

ELECTRODYNAMIC SOUND CONVERTER

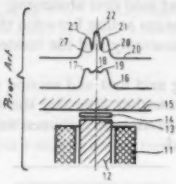
Hermann J. Kopineck, and Wolfgang Böttcher, both of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 796,883

Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621684

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—643 7 Claims



1. An electrodynamic pulse echo sound converter for transmitting and receiving sound pulses when checking materials, which includes in combination an electromagnet having a core with a front end portion having a foremost part to face the workpiece to be checked, said electromagnet being operable to generate a magnetic field and direct same onto the surface of a workpiece to be checked, and an excitation coil associated with said magnet and located in front of said front end of said core for generating oscillations, said front end portion of said core decreasing in cross section toward said foremost part with the rate of decrease increasing steadily toward said foremost part.

4,138,897

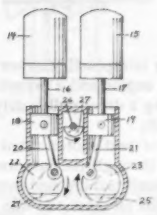
BALANCED CRANKSHAFT MECHANISM FOR THE TWO PISTON STIRLING ENGINE

Melvin A. Ross, 37 W. Broad St. #630, Columbus, Ohio 43215

Filed Jan. 6, 1977, Ser. No. 757,350

Int. Cl.[2] F16H *21/18*

U.S. Cl. 74—45 6 Claims



1. A balance mechanism for a Stirling engine of the type which has two parallel cylinders and a yoke and which has a first piston reciprocating in one of said cylinders and a second piston reciprocating in the other of said cylinders, and which has a first connecting rod one end of which is rotatably attached to said first piston and the other end of which is rotatably attached to said yoke at a first point, and which has a second connecting rod one end of which is rotatably attached to said second piston and the other end of which is rotatably attached to said yoke at a second point, and which has a rocking lever one end of which is rotatably attached to a stationary pin and the other end of which is rotatably attached to said yoke at a third point equidistant between and on a line with said first and second points on said yoke, and which has a crankshaft with a single crankpin, which crankshaft is located equidistant between the extended axes of the two parallel cylinders, and which crankshaft rotates on an axis perpendicular to the plane on which said cylinder axes lie, and the crankpin of said crankshaft is rotatably attached to said yoke at a fourth point on said yoke which is equidistant from said first and second points and at a distance from said third point, and with the first piston constructed of such mass as will make the total reciprocating masses associated with one cylinder equal to the total reciprocating masses associated with said other cylinder, said balance means comprising;

(a) counterbalance weight means attached to the crankshaft and rotating with it, exerting an inertial force radially opposite the crankpin of said crankshaft and in the same plane of rotation, said force being identical to that which would be exerted by a mass, equal to the reciprocating masses associated with one cylinder, rotating at the same angular velocity and at the same distance from the center of rotation as said crankpin, and;

(b) a counterbalance shaft counter-rotating at the same angular velocity as said crankshaft, on an axis parallel to that of said crankshaft and on the opposite side of said yoke from said crankshaft at a distance from said crankshaft equal to the product of the distance between the inertial centerlines of said reciprocating masses times the ratio of the distances on the yoke between said third point where the rocking lever is attached and said first point where the first connecting rod is attached, divided by the distance between said third point where the rocking lever is attached and said fourth point where the crankpin is attached, said counterbalance shaft balanced so as to exert equal radial inertial force, on the same plane, as said counterbalance weight means, and;

(c) drive means for driving and synchronizing said crankshaft and said counterbalance shaft so they counter-rotate with equal angular velocity and their radial inertial forces act simultaneously in the same direction only on a line intersecting their respective axes of rotation.

4,138,898

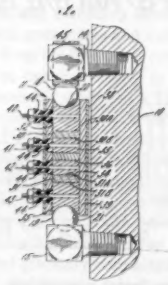
SYSTEM FOR CONTINUOUSLY MONITORING COMPRESSION AND TENSION LOADS ON FORCE CARRYING MEMBER

Frank R. Dybel, 981 Wingate Rd., Olympia Fields, Ill. 60461

Filed Dec. 30, 1977, Ser. No. 865,794

Int. Cl.[2] G01B *7/16*

U.S. Cl. 73—767 6 Claims



1. A system for monitoring loads that are intermittently applied to a force carrying member comprising a transducer, a pair of brackets mounted on said force carrying member for supporting said transducer between the ends thereof, said transducer including a pair of piezoelectric elements each adapted to generate an electrical output signal proportional to the change in stress on said member, first circuit means electrically coupled to one of said piezoelectric elements and being responsive to electrical output signals generated by said one element upon increases in compressive stresses in said member for monitoring compressive forces applied to said member, and second circuit means electrically coupled to the other of said piezoelectric elements and being responsive to electrical signals generated by said other element upon increases in tension

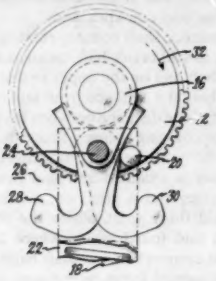
stresses on said member for monitoring tension loadings applied to said member.

4,138,899

GEAR AND BOSS PROTECTOR

Howard A. Forhaltz, Lanesborough, Mass., and Kenneth H. Sickler, Simsbury, Conn., assignors to General Electric Company

Filed Aug. 1, 1977, Ser. No. 820,590
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—100 R **2 Claims**



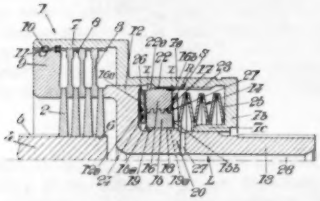
1. A spring-driven tap changer comprising a driving gear having a boss thereon for driving a crank member to load a spring and including a protective means for preventing damage to said boss and said driving gear, said protective means comprising means pivotally mounted on said crank and actuated by reverse rotation of said boss prior to a tap change to engage said boss and prevent sudden spring action from moving said crank in damaging relation against said boss.

4,138,900

SPEED CHANGE DEVICE

André F. Estaque, Bagneux, France, assignor to Societe Anonyme Automobiles Citroen, France

Filed Mar. 22, 1977, Ser. No. 780,070
Claims priority, application France, Apr. 6, 1976, 76 09972
Int. Cl.[2] F16H *15/12, 15/14*
U.S. Cl. 74—199 **9 Claims**



1. A speed change device comprising:

a hollow drum defining a longitudinal axis and a radially inwardly extending first abutment;

first and second shafts extending into said drum substantially parallel to said axis;

a plurality of radially extending discs received on said first shaft, said discs being rotatable with said first shaft and axially movable along said first shaft;

a second abutment within said drum, means connecting said drum to said second abutment for translatory movement;

a bell shaped member disposed in said drum and fixed to said second shaft;

a plurality of radially extending friction rings in said drum and engaged with the inner surface of said drum to rotate with said drum and to move axially within said drum, said discs and friction rings being interleaved to form a stack of alternate discs and rings gripped between said second abutment and said bell-shaped member;

clamping means comprising a screw rotatable with said second shaft and axially movable along said second shaft and a nut cooperating with said screw to form a screw and nut assembly, said nut being rotatable with said drum said screw and nut having complementary conjugate surfaces exerting an axial force dependent on the transmitted torque, and axially movable along said drum, first resilient means being disposed between one end of said screw and nut assembly and said first abutment;

second resilient means acting between the other end of said screw and nut assembly and the inside of said bell-shaped member; and

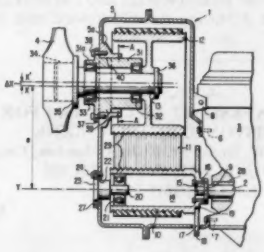
means for moving said first and second shafts radially with respect to one another whereby the axial length of said stack and the speed ratio between said first and second shafts are varied.

4,138,901

SPEED REDUCER, PARTICULARLY FOR DRIVING A PROPELLER

Raymond Fortin, Fresnes, and Francois Peroy, Bourg La Reine, both of France, assignors to Regie Nationale des Usines Renault, Billancourt, France

Filed Feb. 15, 1977, Ser. No. 768,762
Claims priority, application France, Feb. 16, 1976, 76 04167
Int. Cl.[2] F16H *7/00, 7/10*
U.S. Cl. 74—219 **8 Claims**



1. A speed reducer interposed between the output shaft of an internal combustion engine and a propeller, comprising:

a housing enclosing a drive pulley driven at one end by the motor crankshaft;

the drive pulley of said motor crankshaft transmitting its rotary motion, through the intermediary of a belt, to a driven pulley, itself turning said propeller shaft;

characterized by the fact that one side wall of the housing is attached to the motor while the opposite wall of the housing supports, by suitable borings, a fixed shaft on the other end of the drive pulley on the one hand, and an adjustable bearing of the propeller shaft on the other hand.

4,138,902

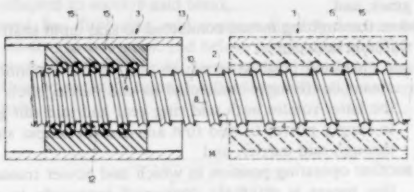
SCREW-NUT SCREW TRANSMISSION COUPLING WITH BALL CIRCULATION

Enzo Brusasco, Turino, Italy, assignor to Roltra S.p.A., Milan, Italy

Filed Aug. 9, 1977, Ser. No. 823,238
Claims priority, application Italy, Nov. 19, 1976, 69764 A/76
Int. Cl.[2] F16H *1/18, 55/22*
U.S. Cl. 74—424.8 R **8 Claims**

1. A screw-nut screw transmission coupling with ball circulation of the type comprising a first elongated element and a second tubular element substantially coaxial to each other and with an external and an internal helical track respectively, said two tracks being disposed facing each other to define a helical rolling path for a plurality of balls disposed in mutual contact

along said path and along a recirculation duct connecting the two ends of said path together, in the coupling said first element being constituted by an inner core and a metal strip



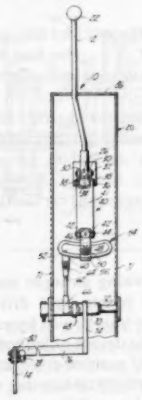
wound in a cylindrical helix about and along said core, said strip being rigid with said core and having a cross-section which is concave outwards to define one of said helical tracks.

4,138,903

HYDROSTATIC TRANSMISSION CONTROL

Stephen D. Burdette, Bloomfield Hills, Mich., and Michael L. Wenning, Greensburg, Ind., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Oct. 5, 1977, Ser. No. 839,544
Int. Cl.[2] G05G *7/00, 5/04*
U.S. Cl. 74—473 R **11 Claims**



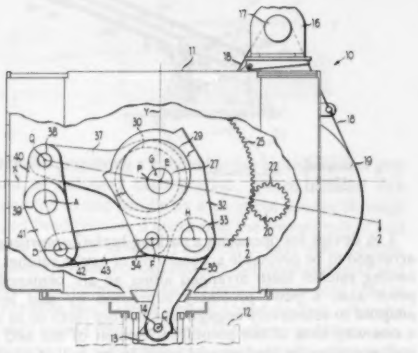
1. A manually operated control arrangement for regulating a hydrostatic transmission of a vehicle drive system from a neutral operating condition to a selected forward or rearward driving condition and for varying the speed of operation in either of said forward or rearward driving conditions, the combination of; a control member supported for movement in opposite directions from a neutral point to a forward control range or to a reverse control range, said control member being movable vertically in a selected one of said ranges to vary the speed of drive of said transmission, a hand operated lever connected to said control member and being pivotal about a first axis to swing said control member into one of said ranges, said lever being pivotal about a second axis to move said control member vertically, a guide member coacting with said lever and defining a first path requiring movement of said lever into one of said the selected ranges while said control member is maintained vertically stationary and said transmission remains at zero speed, said lever being movable about said second axis from said first path into a selected one of a pair of paths to move said control member vertically and change the speed of said transmission.

4,138,904

LINK DRIVE MECHANISM FOR MECHANICAL PRESSES

Tsuruo Otsuka, South Holland, Ill., and Jacob J. Zeilenga, Demotte, Ind., assignors to Verson Allsteel Press Company, Chicago, Ill.

Filed Jul. 20, 1977, Ser. No. 817,205
Int. Cl.[2] G05G *3/00*; F16H *35/08, 21/32, 29/00*
U.S. Cl. 74—570 **13 Claims**

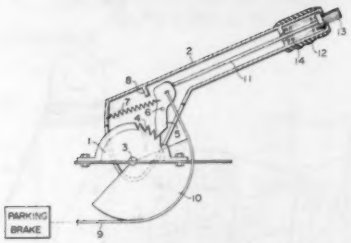


1. In a mechanical press having a bed, a crown and a slide vertically movable therebetween for performing a work function on a work piece supported by the bed and having a connecting means for vertically moving the slide, a link drive mechanism in the crown connected to the connecting means of the slide for vertically moving the slide and comprising, a power driven eccentric unit carried by a horizontal shaft arranged substantially vertically above the connecting means of the slide and having a first eccentric arranged substantially vertically above the connecting means of the slide and a second eccentric adjacent thereto, a first eccentric strap carried by the first eccentric and extending downwardly therefrom and having a first pivot connection and a second pivot connection laterally spaced from the first pivot connection, a first link pivotally connected at one end thereof to the first pivot connection of the first eccentric strap and at the other end thereof to the connecting means of the slide, a second eccentric strap carried by the second eccentric and extending laterally therefrom and having a pivot connection, a substantially vertically extending fulcrum lever arranged laterally from the horizontal shaft and pivoted intermediate its ends on a stationary pivot and having one of its arms pivotally connected to the pivot connection of the second eccentric strap, and a second link extending laterally and pivotally connected at one end thereof to the other arm of the fulcrum lever and at the other end thereof to the second pivot connection of the first eccentric strap, said second eccentric, second eccentric strap, fulcrum lever and second link providing primarily horizontal movement to the first eccentric strap and the first pivot connection thereof, and said first eccentric and first eccentric strap providing primarily vertical movement to the first pivot connection of the first eccentric strap, to substantially align the first pivot connection of the first eccentric strap with the horizontal shaft and the slide connecting means during the work function performing portions of the downward working stroke of the slide, and to produce, during the work function performing portions of the downward working stroke of the slide, controlled slide positions, slide velocity and tonnage capacity of the press.

4,138,905
DEVICE FOR OPERATING A PARKING BRAKE

Hiromu Konishi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 25, 1977, Ser. No. 800,425
Claims priority, application Japan, Jan. 25, 1977, 52-6905
Int. Cl.[2] G05G *1/00, 3/00*
U.S. Cl. 74—577 R 6 Claims

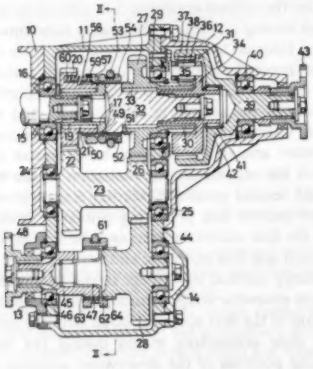


1. A device for operating a parking brake comprising a lever arranged to be pivotable around a pivot axis, a ratchet element having ratchet teeth arranged along an arc centered at said pivot axis, a pawl pivotably supported by said lever and adapted to selectively engage said ratchet teeth so as to effect a one-way lock of the pivotal movement of the said lever, a spring resiliently biasing said pawl to be out of engagement with said ratchet teeth, a release element for biasing said pawl to be out of engagement with said ratchet teeth, a cable for actuating the parking brake, said pawl having a portion connected with one end of said cable and adapted to stretch said cable in accordance with a pivotal movement of said lever, said portion being spaced from the pivot axis of said pawl so that said pawl is pivotally moved toward engagement with said ratchet teeth by the reaction force applied by said cable so that said pawl engages at least one of said ratchet teeth when said cable is stretched beyond a predetermined tensioned condition.

4,138,906
POWER DISTRIBUTING APPARATUS FOR VEHICLES

Toshiyuki Nakao, Chiryu; Shunichi Kawai, Toyota, and Hiroji Yamaguchi, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 10, 1977, Ser. No. 805,359
Claims priority, application Japan, Jun. 22, 1976, 51-73719
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—674 7 Claims

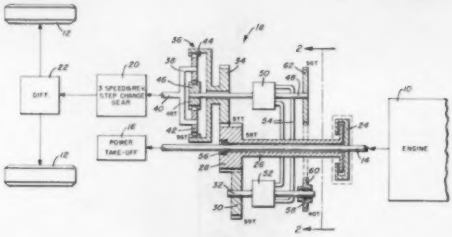


1. A power distributing apparatus for vehicles comprising:
an input shaft;
first and second output shafts; and
a simple planetary gear set including a carrier operatively connected to said input shaft, planet gears carried by said carrier, a ring gear operatively connected with said first output shaft and said planet gears, and a sun gear operably connected to said second output shaft and said planet gears; and
power transmitting means connected to said input shaft and shiftable between
one operating position in which said power transmitting means is drivingly connected to said carrier such that the latter rotates both said ring gear and said sun gear, to supply power to said first and second output shafts through said carrier, and
another operating position in which said power transmitting means is drivingly connected separately to said carrier and said sun gear to transmit power from said input shaft separately to said carrier and said sun gear in a manner rotating said sun gear more slowly than said carrier.

4,138,907
HYDROMECHANICAL TRANSMISSION WITH OVERSPEED LIMITED VARIABLE DRIVE

Harold W. Melles, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 601,783, Aug. 4, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,324
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—687 20 Claims



1. A transmission comprising an input member, an output member, a positive drive power train driven by the input member, a yieldable power train driven by said input member having a variable drive ratio device of limited torque transmitting capacity relative to said positive drive power train, power path combining means drivingly connecting said power trains to said output member for transmitting torque through a variable drive ratio range, and overspeed control means interconnected between said positive drive power train and said power combining means for limiting the torque loading of said variable drive ratio device without requiring a decrease in said variable drive ratio range.

4,138,908
APPARATUS FOR THE DRESSING (STRAIGHTENING) OF CIRCULAR-SAW BLANKS AND ESPECIALLY HOT-SAWING CIRCULAR-SAWBLADE BLANKS

Walter Kampmann, and Ingo Kampmann, both of Dortmund, Fed. Rep. of Germany, assignors to Bêche & Grohs GmbH, Huckeswagen, Fed. Rep. of Germany

Filed Aug. 22, 1977, Ser. No. 826,967
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638161
Int. Cl.[2] B23D *63/18*
U.S. Cl. 76—26 3 Claims

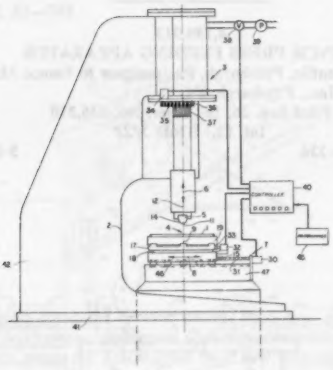
1. An apparatus for the dressing of circular saw blade blanks especially for hot-sawing circular saws and other industrial circular saws, comprising:
a forging hammer stand;

a vertically reciprocatable pneumatic forging hammer mounted on said stand and disposed above a workpoint, said hammer being formed at its lower end with a tool;

a workpiece support disposed below said hammer and adapted to receive said blank;

means for displacing said support linearly in translation relative to said point and below said hammer;

means for rotating said support and the blank carried thereby through an angle of at least 180° about a vertical axis;



means for rotating said tool through an angle of at least 90° about a vertical tool axis;

a carriage horizontally displaceable relative to said stand and said location;

a turntable on said carriage rotatable through at least 180° and formed with a rotating crown; and

a workplate carrying said blank and disposed upon said table, said tool being formed with a replaceable peen having a cylindrical surface engageable with said blank.

4,138,909

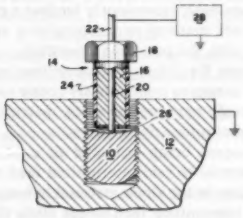
BOLT EXTRACTOR

Stephen Johnson, 1728 Durand St., Saginaw, Mich. 48602

Filed Dec. 2, 1977, Ser. No. 856,671

Int. Cl.[2] B25B *27/00*

U.S. Cl. 81—53.2 **1 Claim**



1. A bolt extractor for extracting a bolt shank or the like from a tapped hold comprising a headed stud having a wrench engageable head and a shank of a diameter less than that of the hole from which a bolt shank is to be removed, said stud having a coaxial bore therein, a welding rod fixedly mounted in said bore and projecting axially from opposite ends of said stud, and electrical insulation means encasing the shank of said stud.

4,138,910

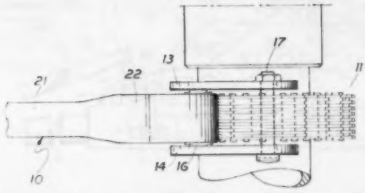
CLEATED CHAIN WRENCH

Jonathan L. Laird, Jr., 50 E. First Ave., Parkesburg, Pa. 19363

Filed Oct. 11, 1977, Ser. No. 840,618

Int. Cl.[2] B25B *13/52*

U.S. Cl. 81—67 R **5 Claims**



1. A wrench comprising a handle having an enlongated grip portion and an enlarged head portion, spaced parallel link elements pivoted to said handle by a pivot pin passing through said enlarged head portion, a fastener at the remote end of said link elements disposed in spaced relation to said head portion, a chain element pivoted on said fastener between said links and having a free end portion adapted to pass between said links in the space between said fastener and said head portion, whereby the chain may extend from said remote fastener in full circumscribing relation to a workpiece and pass between said handle and said remote fastener, said chain comprising parallel pointed cleats extending transversely the full width of the chain on one surface thereof and a smooth back on the other surface thereof, a camming surface on said head portion remote from the pivot pin mounting said links and positioned to confront the exposed surface of the chain when it is wrapped around the workpiece in one direction with the cleats engaging the workpiece and said camming surface operable to bear against the smooth back of the chain in the portion of the chain circumscribing said workpiece to thereby securely anchor the chain against the workpiece, said camming surface being convex and of sufficient length to permit said camming surface to be the sole anchoring means for said wrench upon torque being applied to workpieces having differing diameters, said head portion including a plurality of teeth centered about the pivot pin for said link elements and projecting radially outward to confront the cleated surface of the chain when it is wrapped around the workpiece in the opposite direction with the smooth sides of the chain bearing against the workpiece, said teeth meshing with said cleats to securely tighten the chain around said workpiece upon application of torque by said handle, whereby said wrench is operable to engage the workpiece either with the pointed teeth of the cleated side or with the smooth surface of the smooth side.

4,138,911

CUTTING TOOL

Yasuteru Namiguchi, Yao, Japan, assignor to Toho Koki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1977, Ser. No. 856,600

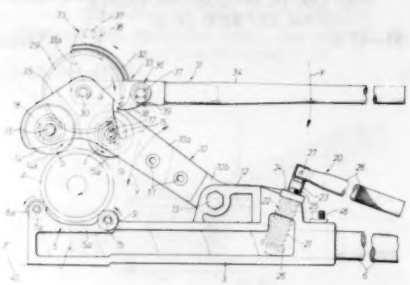
Claims priority, application Japan, Jan. 19, 1977, 52-005566

Int. Cl.[2] B23B *3/04, 5/14*

U.S. Cl. 82—72 **7 Claims**

1. A portable cutting tool comprising a base main body having a bearing portion including a pair of freely rotatable members, a vertically movable cutter arm provided with a pair of rotary cutters opposed to the rotatable members in corresponding relation thereto, cutter arm operating means for moving the rotary cutters on the cutter arm toward or away from the rotatable members, and cutting force applying means including intermittent feeding means for rotating both the rotary cutters in the same direction, so that the cutting force

applying means when operated in a cutting direction causes the rotary cutters to progressively cut a workpiece placed on the



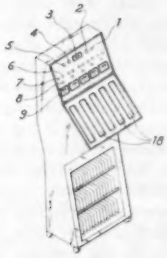
rotatable members and held by the rotatable members and the rotary cutters while rotating the workpiece about its axis.

4,138,912

UNIT FOR PROGRAMMED CONTROL OF BLANKING MACHINES

Giuseppe Bocca; Tiziano Mostura, and Bruno Valli, all of Vigevano (Pavia), Italy, assignors to Elemac S.p.A., Vigevano, Italy

Filed Jun. 25, 1976, Ser. No. 699,967
Int. Cl.[2] B26D 5/00
U.S. Cl. 83—69 **1 Claim**



1. A unit for programmed control blanking or die cutting machines, comprising: a plurality of files for receiving different blanks or die cuts, means (13,14) in said files for responding to the presence of blanks or die cuts, a counter allowing presetting of a number of process steps to be applied to blanks or die cuts means for controlling the number of applied process steps; means for signaling the number of applied process steps; means for comparing the number of applied process steps with the number preset into said counter during operation, each file having a bottom; said means for responding to presence of blanks or die cuts comprising:

a lever located at the bottom of a respective file,

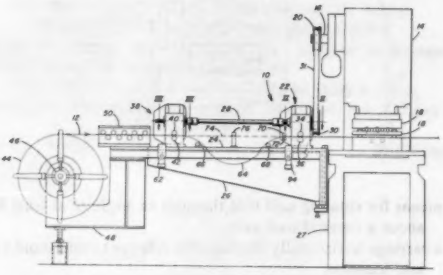
switch means actuated by said lever, said lever being displaced by weight of a blank or die cut, withdrawal of a blank or die cut activating said lever, each file having depth, a support for said lever and slidable along the depth of a respective file, a guide member extending along the depth of said respective file, a guide member extending along the depth of said respective file for guiding said support, said support being adjustable along the guide member, and a blocking member on said support for a bar fixing said support to said guide member at a predetermined location, said guide member being substantially inclined with respect to a horizontal plane, said files having openings substantially at right angles to said guide member, said files having depth adjustable by varying the location of said support on said guide member, said counter comprising a two-slot counter for numerical setting and for numerical control, a warning light for signalling attainment of a maximum number of process steps according to the pre-set number of process steps, a rheostat for regulating a parameter of a processing step, a control board with a totalizing counter for adding all sums of the individual counters associated with said file, a warning lamp indicating when a blank or die cut has been withdrawn from a file, switch means providing for possible repetition out of counting for a faulty blank or die cut.

4,138,913

PUNCH PRESS FEEDING APPARATUS

Patrick J. Gentile, Pittsburgh, Pa., assignor to Vamco Machine and Tool, Inc., Pittsburgh, Pa.

Filed Sep. 26, 1977, Ser. No. 836,310
Int. Cl.[2] B26D 5/22
U.S. Cl. 83—236 **5 Claims**



1. Apparatus for the controlled feeding of stock material to a punching apparatus comprising,

pull means for continuously pulling the stock material from a source,

intermittent feed means for intermittently feeding a preselected length of the stock material to the punching apparatus,

an input shaft adapted to be drivingly connected to the punching apparatus for rotation at a continuous preselected speed,

said input shaft extending longitudinally parallel to the direction of feed from the punching apparatus to said intermittent feed means and therefrom to said pull means,

first means for drivingly connecting said input shaft to said intermittent feed means to convert continuous rotation of said input shaft to intermittent rotation of said intermittent feed means for intermittently feeding a preselected length of the stock material to the punching apparatus in timed relation with the punching operation,

second means for drivingly connecting said input shaft to said pull means to continuously rotate said pull means and continuously advance the stock material from the source to said intermittent feed means,

said pull means being operable to continuously feed the stock material to said intermittent feed means at a rate to form a loop in the stock material between said pull means and said intermittent feed means while the punching apparatus performs to punching operation and while said intermittent feed means interrupts the feed of the stock material to the punching apparatus to thereby store in said loop the amount of stock material fed to the punching apparatus for each cycle of operation of the punching apparatus, and

said intermittent feed means being operable to feed a preselected length of the stock material corresponding to the length of the stock material stored in the loop to the punching apparatus so that the stock material positioned

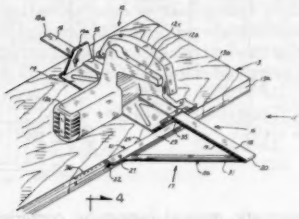
between said pull means and said intermittent feed means moves from a looped position to a substantially horizontal position and all the stock material stored in said loop is fed to the punching apparatus and said loop is removed after the feeding operation.

4,138,914

SAW GUIDE APPARATUS

Donald G. Reeder, R.R. #2, Box 48, Galesburg, Ill. 61401

Filed Dec. 12, 1977, Ser. No. 859,763
Int. Cl.[2] B27B *9/04*
U.S. Cl. 83—745 **6 Claims**



1. Guide apparatus for use with a hand saw employed in cutting workpieces, said guide apparatus comprising:

unitary means for guiding the hand saw including first and second contiguous guide portions, said first guide portion being longer than said second guide portion, said guide portions from the jointure thereof having terminal ends extended in the same direction, said guide portions forming a space therebetween, the hand saw being slidable along said first guide portion and slidably receivable within said space; and

adjustable means for supporting said unitary means, said adjustable means including an angle member and an arm member, said second guide portion adjacent said terminal end thereof being pivotally mounted upon said angle member, said arm member at one end thereof being pivotally affixed to said angle member and extending therefrom toward said second guide portion, said second guide portion slidably receiving said arm member adjacent said guide portions' jointure, said angle member being removably disposable against the side of a workpiece, said first guide portion being disposable across the surface of the workpiece to be cut.

4,138,915

ELECTRONIC MUSICAL INSTRUMENT PRODUCING TONES BY VARIABLY MIXING DIFFERENT WAVESHAPES

Yohei Nagai, and Shimaji Okamoto, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 2, 1977, Ser. No. 773,788
Claims priority, application Japan, Mar. 5, 1976, 51/23795
Int. Cl.[2] G10H *1/06*
U.S. Cl. 84—1.22 **9 Claims**

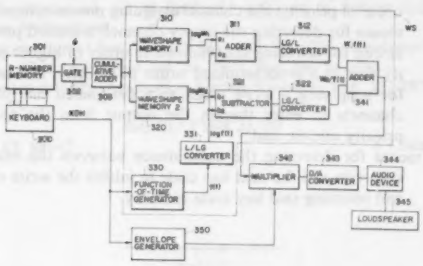
1. An electronic musical instrument of a waveshape memory type comprising:

a plurality of waveshape memories for storing waveshapes of different tone colors and reproducing waveshape signals of said different tone colors;

means for mixing the waveshape signals from said plurality of waveshape memories;

means for controlling the mixing ratio of said waveshape signals, and in which

said control means includes a function-of-time generator for generating a function-of-time signal, arithmetic means for achieving different arithmetic operations on said waveshape signals with said function-of-time signal to produce varying partial tone signals of said different tone colors



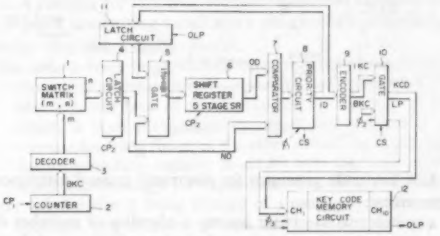
and said mixing means is an adder for adding said varying partial tone signals.

4,138,916

KEY ASSIGNOR

Hiroshi Kitagawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawaigakki, Hamamatsu, Japan

Filed Jun. 29, 1977, Ser. No. 811,079
Claims priority, application Japan, Jul. 2, 1976, 51-78646
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.01 **2 Claims**



1. A key assignor comprising:

a scanning circuit for block-dividing a plurality of key switches to successively scan the switches by blocks in accordance with a predetermined clock;

change detecting means for detecting a change of the switch state in every block, said change detecting means comprising a first memory for temporarily storing switch information of a scanned block, a second memory for storing the switch information by block of a previous scan as was stored in said first memory; and comparator means for compraring the switch states from said first and second memories to detect changes in the switch states;

a priority circuit means for successively selecting, by a predetermined clock, outputs from the change detecting means in order of higher priority first, in accordance with a predetermined order to priority, the priority circuit means comprising, a first priority circuit for selecting one signal of a higher priority from a plurality of input signals, a memory circuit for temporarily storing the output from the first priority circuit and a gate circuit for inhibiting the input signals of lower priority than the selected output signal from the memory circuit;

means for inhibiting the scanning circuit during the operation of the priority circuit means;

means for converting into a binary code the block scanning output and the output from the priority circuit means to form key codes;

a key code memory having a plurality of channels in parallel for temporarily storing the key codes;

channel assigning means for detecting an empty channel of the key code memory to thereby assign the key codes to the empty channel in accordance with a predetermined order of priority, the channel assigning means comprising, means for detecting the empty channel, a second priority circuit for selecting the channels in order of higher priority first in a predetermined order of priority, and means for supplying a write clock to a designated one of the channels to enter therein the output from the second priority circuit; and

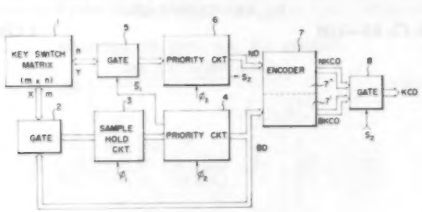
means for detecting the coincidence between the entered key code and the next key code to inhibit the write clock and resetting said key code memory.

4,138,917

KEY CODE GENERATOR

Noriji Sakashita, and Hiroshi Kitagawa, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Jun. 30, 1977, Ser. No. 811,638
Claims priority, application Japan, Jul. 2, 1976, 51-78645
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.01 **2 Claims**



1. A key code generator for electronic musical instruments comprising:

a switch matrix circuit having a plurality of switches disposed at the intersections of two sets of buses, each line of one set of buses respectively designating a block of switches, and each line of the other set of buses respectively designating a switch line;

means for simultaneously applying signals to all the lines of said switch lines to simultaneously derive outputs from block lines;

a first memory for simultaneously detecting all the blocks having at least one switch in the on state from the bus outputs of the block lines and temporarily storing block signals representative of the detected blocks;

a first priority selector for selecting said block signals in a predetermined order of priority from said bus outputs and sequentially outputting said block signals with a predetermined clock pulse;

means for inhibiting the block detecting operation by said first memory during outputting from the first priority selector, and for applying the selected block signals to the block lines corresponding to the detected blocks to sequentially scan only the detected blocks;

a second priority selector for simultaneously detecting switch signal outputs from the switch lines of the scanned blocks which are in an on state an for selecting said switch signals in a predetermined order of priority and for sequentially outputting the switch signals with a predetermined clock pulse; and

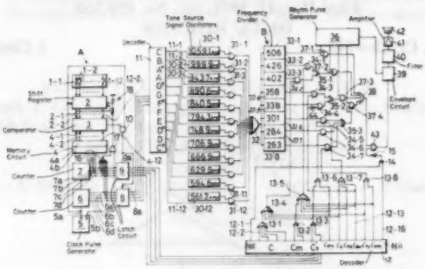
means for preventing clock pulses from inputting to the first priority selector until the switch signals of all designated block are outputted.

4,138,918

AUTOMATIC MUSICAL INSTRUMENT

Hiroshi Kato, Ageo, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamatsu; Sanyo Denki Kabushiki Kaisha, Moriguchi and Tokyo Sanyo Denki Kabushiki Kaisha, Gumna, all of, Japan

Filed May 5, 1977, Ser. No. 794,233
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.03 **5 Claims**



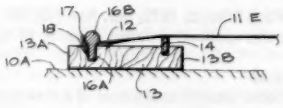
1. An automatic musical instrument comprising a chord discrimination circuit; a musical performance circuit connected to an output side of the chord discrimination circuit; a comparator having multiple input terminals on one side; a memory circuit connected to said multiple input terminals on said one side of said comparator; said memory circuit having multiple basic types of chords in memory; said comparator having multiple input terminals on another side; a shift register; key-switches connected to said multiple input terminals of said other side of said comparator through said shift register; a clock pulse generator connected to a control electrode of said shift register, said memory circuit having multiple input terminals; first and second counter circuits, said clock pulse generator being connected to said multiple input terminals of said memory circuits through said first and second counter circuits; said first and second counter circuits having multiple output terminals; first and second latched circuits connected respectively to said output terminals of said first and second counter circuits; said comparator having an output terminal connected to control electrodes of said first and second latch circuits, said first and second latched circuits being connected to said musical performance circuit.

4,138,919

STRING SET AND STRING SECURING APPARATUS FOR MUSICAL INSTRUMENTS

Roger D. Miller, 9670 Fawnridge Dr., Beverly Hills, Calif. 90210

Filed Feb. 3, 1977, Ser. No. 765,263
Int. Cl.[2] G10D *3/12, 3/14*
U.S. Cl. 84—297 R **12 Claims**



1. Apparatus for stringing a stringed instrument, said instrument having forward and rear ends and said apparatus comprising:

a set of instrument strings of selected measured lengths, each of said instrument strings having first and second ends and a loop formed on both said first string end and said second string end;

means for detachably securing said second string ends on the rear end of said instrument in a laterally spaced apart

disposition, said means for detachably securing said second string ends on the rear end of said instrument comprising crosspiece structure carrying upwardly extending spaced apart string holding posts over which the loops on said second string ends may be hooked;

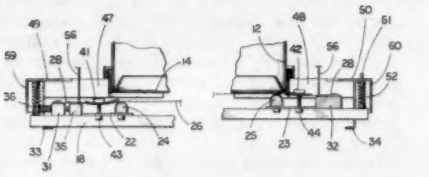
resilient finger means associated with each of said string holding posts carried by said crosspiece for retaining the loops on said second string ends hooked around said posts; and

tuning mechanism for each string arranged for mounting on the forward end of said instrument, each of said tuning mechanisms including a rotatable shaft driven by a tuning key and being arranged for mounting on the first end of said instrument with said rotatable shafts extending upwardly therefrom, each of said rotable shafts carrying string holding posts thereon over which the loops on said first string ends may be hooked so that said strings may be tightened to an appropriate tension by turning said tuning keys.

4,138,920
SNARE DRUM ATTACHMENT

David E. Meador, 2560 S. Union St., Indianapolis, Ind. 46225

Filed Jul. 28, 1977, Ser. No. 819,866
Int. Cl.[2] G10D *13/02*
U.S. Cl. 84—415 7 Claims



1. A snare drum attachment comprising:

(a) a first bar of about the same length as the snare head diameter of a snare drum;

(b) a pair of bridges mounted to said first bar;

(c) a plurality of snares stretched across said bridges and defining a snare surface;

(d) means for cushioning said stretched snares against said bridges;

(e) means for attaching said first bar to a snare drum directly below the snare head;

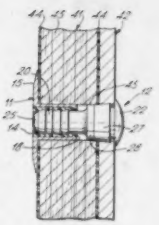
(f) means for adjusting the vertical drop of said bridges thereby adjusting the distance separating the snare surface and the snare head; and

(g) means for adjusting the tension on said stretched snares, said means for cushioning comprising a pair of vibration-absorbing pads, one of said pads being positioned between said stretched snares and each of said bridges thereby preventing the transfer of vibrations between said snares and said bridges and maintaining said stretched snares in fixed straight lines across the snare surface, said means for cushioning additionally comprising a pair of countertension bars positioned outside said bridges and being vertically adjustable to stretch said snares downwardly across said bridges thereby defining the snare surface, said counter-tension bars including vibration- absorbing pads positioned between said stretched snares and said countertension bars to dampen all residual vibrations remaining in said snares and thereby prevent the transfer of residual vibrations between said snares and said countertension bars.

4,138,921
FASTENER

Hugh K. McGauran, Harlow; John W. C. Saxon, Sawtry; Raymond D. Lacey, Essendon, and Frederick A. Summerlin, Wheathamstead, all of England, assignors to Aerpat A.G., Zug, Switzerland

Continuation of Ser. No. 659,589, Feb. 19, 1976, abandoned.
This application Jul. 20, 1977, Ser. No. 817,487
Claims priority, application United Kingdom, Feb. 21, 1975, 7440/75
Int. Cl.[2] F16B *21/00*
U.S. Cl. 85—7 6 Claims



1. A fastener for fastening together apertured members of a workpiece, comprising a shell and a pin, the shell comprising a tubular body and a tubular sleeve,

the tubular body being formed of strong, rigid material and having an elongate shank, a radially enlarged head for abutting one face of the workpiece at one end of the shank, a bore throughout the head and shank and an annular retaining flange at the other end of the shank, said flange extending radially inwardly into the bore of the shank and defining a central aperture coaxial with the bore,

the tubular sleeve being formed of a resiliently deformable material, and disposed within the bore of the body in abutment with said retaining flange, said sleeve having throughout its length a smooth bore of a substantially constant diameter which is less than that of said central aperture and forming a continuous lining within the bore of the body, the sleeve being supported externally throughout its length by the body;

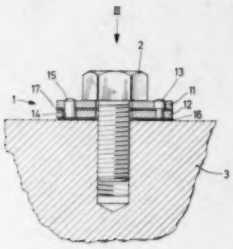
the pin of the fastener being formed of rigid material and comprising an elongate shank and a radially enlarged pin-head for abutting an opposite face of the workpiece at one end of the shank, the shank of the pin having a main part adjacent to the pin-head, a pin-tail remote from the pin-head and a weakened portion between the main part and the pin-tail,

the main part having integral barb means directed towards the pin-head for embeddedly engaging the tubular sleeve of the shell, that part of the pin-shank between the barb means and the end of the pin remote from the pin-head being a clearance fit in in the bore of the sleeve and the barb means being able to pass through the central aperture of the body and, by resiliently deforming the sleeve, to enter the bore of the sleeve, the shank of the pin being of sufficient length to extend entirely through members of a workpiece to be fastened together and to enable the pin-tail to be gripped and pulled by a tool for installing the fastener, so that the shank of the pin may be pulled to cause the barb means to enter the bore of the tubular sleeve at the end thereof remote from the head of the shell and to embed in non-retreat engagement in the sleeve.

4,138,922
SAFETY DISK ASSEMBLY

Martin Richter, Freising, and Albert Busler, Puchheim, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jul. 20, 1977, Ser. No. 817,503
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632605; Dec. 15, 1976, 2656832
Int. Cl.[2] F16B *31/02*
U.S. Cl. 85—62 18 Claims

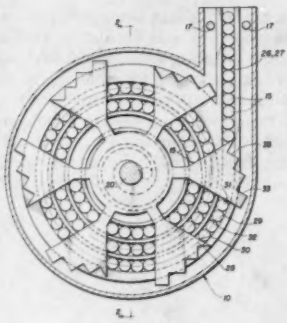


1. A safety disk assembly including a fastening member to be secured into a base structure with the fastening member, such as a bolt, stud, dowel or the like, and a safety disk member, said fastening member comprising an axially elongated shank arranged to extend into the base structure with an axially extending part thereof projecting outwardly from the base structure, and a fastening part located on the part of said shank projecting outwardly from the base structure, said fastening part extending transversely outwardly from the outer surface of said shank, said safety disk member being arranged between the fastening part and the base structure and laterally encircling said shank so that the safety disk member is passed between the fastening part and the base structure as the fastening part is tightened toward the base structure, said safety disk member comprises a first washer-like ring disk having an opening therethrough, a second washer-like ring disk having an opening therethrough, the openings of said first and second disks being aligned, the surfaces defining the openings in said first and second ring disks encircling and spaced radially outwardly from the outer surface of said shank so that rotation or axial movement of said shank occurs without surface contact with said first and second ring disks, said first and second disks each having a first face surface and a second face surface with the face surfaces extending transversely of the axial direction of the openings through said disks, the second surface of said first disk disposed in contact with the first surface of said second disk, means for interconnecting said first and second disks having a predetermined breaking point for preventing relative rotation between said first and second disks until the predetermined breaking point has been exceeded in tightening the fastening part toward the base structurre, the first surface of said first disk arranged to face toward the fastening part and the second surface of said second disk arranged to face toward the base structure, the friction coefficients and effective radii of the first surface of said first disk and the second surface of said second disk being selected so that when a tightening force in the form of a torque is applied to the fastening part and directed through said safety disk member for tightening the fastening part toward the base structure and the predetermined breaking point of said means is overcome breaking the interconnection between said first and second disks whereby said disks are released for relative rotation with respect to one another, and means for indicating when the relative rotation of said first and second disks have been effected.

4,138,923
DRUM CARTRIDGE - MAGAZINE

Timothy L. Brosseau, and Arthur Liberatore, both of Havre de Grace, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,111
Int. Cl.[2] F41C *25/10*
U.S. Cl. 89—33 D 4 Claims

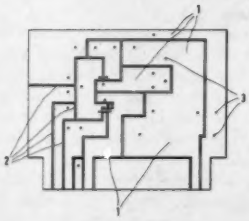


1. A cartridge magazine comprising:
a substantially cylindrical housing having a pair of opposed end walls and a side wall;
a spiral channel terminating in a substantially linear section extending substantially tangentially from the end of the spiral on the interior face of each of said end walls for guiding the nose and base of the cartridge respectively;
spider means interior to said housing having a plurality of arms for dividing the cartridges into a plurality of fixed quantity groups between pairs of said arms, wherein each of said arms includes a plurality of indentures in their radial faces for engaging the cartridges in said linear section; and
drive means connected to said spider means for rotating said arms.

4,138,924
METHOD FOR THE PRODUCTION OF CONDUCTOR PLATES

Jürgen Seebach, Beekestr. 105, 3000 Hannover, Fed. Rep. of Germany

Filed Mar. 30, 1976, Ser. No. 672,080
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1975, 2531196
Int. Cl.[2] B23C *1/16*
U.S. Cl. 90—13.2 1 Claim



1. A method of economically producing in small quantities electrical circuit boards each formed from a plate of electrically insulating material having a continuous deposit of electrically conductive material on at least one side thereof, said method including the steps of guiding scanning means over a master pattern having an electrical circuit defined thereon, said

guiding step being accomplished by moving said scanning means along lines defining areas of said electrical circuit therebetween, and cutting portions of said electrically conductive material from a side of said plate by milling means operatively linked for synchronous movement with said scanning means to produce areas of conductive material defining said circuit, wherein the improvement in said method is comprised of:

prior to said guiding and cutting steps, locking said scanning means and said milling means for movement confined to a straight line extending in a first of two mutually perpendicular directions,

during said guiding step, moving said scanning means over said master pattern along said straight line in said first of said directions proximate areas defining said electrical circuit to cause cutting of said electrically conductive material by said milling means along said straight line in said first of said directions,

thereafter locking said scanning and said milling means for movement along a straight line in a remainder of said two mutually perpendicular directions,

further guiding said scanning means by moving said scanning means over said master pattern along said straight line in said remainder of said directions proximate areas defining said electrical circuit to cause cutting of said electrically conductive material by said cutting means along said straight line in said remainder of said directions in order to define areas on said plate producing said electrical circuit which areas on said plate closely approximate said areas on said master pattern, and

prior to removal of said plate from a position enabling cutting by said milling means, the additional step of cutting completely through said electrically conductive material and said electrically insulating material with said milling means at predetermined locations as indicated on said master pattern to provide openings for connection of external electrical elements to said circuit board.

4,138,925

DEBURRING AN INSIDE WELDING SEAM OF HOLLOW PROFILES

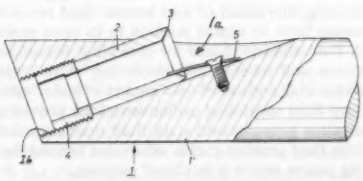
Franz-Josef Schulte, Werl, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 17, 1977, Ser. No. 852,451

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1976, 2653236

Int. Cl.[2] B23D *7/06*

U.S. Cl. 90—24 B **9 Claims**



1. Apparatus for deburring an internal longitudinal welding seam in tubes, pipes or other hollow profiles, comprising:

a shaft for projecting into the tube and having a head, said head having an obliquely oriented bore;

a cutting tube disposed and held in the bore having a cutting edge extending around one axial end of the cutting tube, a limited portion of the edge protruding beyond an outer periphery of the shaft; and

hollow adjustment means in the bore for adjusting the disposition of the cutting tube in axial direction of the cutting tube in axial direction of and in the bore, the cut off burr being guided through the cutting tube and the hollow adjustment means.

4,138,926

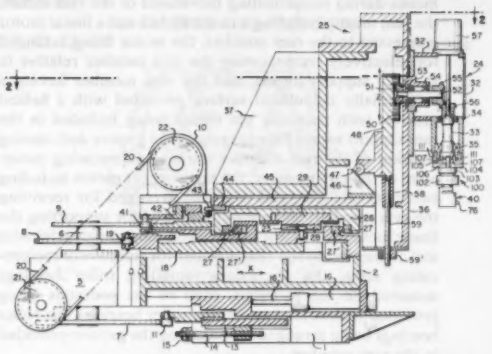
APPARATUS FOR REMOVING MACHINING BURRS

Nils O. Hoglund, Berkeley Heights, N.J., assignor to Hoglund Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed Aug. 29, 1977, Ser. No. 828,820

Int. Cl.[2] B23D *5/00*

U.S. Cl. 90—24 A **27 Claims**



1. An apparatus for removing machining burrs from a work piece by a deburring tool, said apparatus comprising:

(a) a base;

(b) a housing;

(c) means for mounting said housing on said base for movement with respect thereto;

(d) a tool holder;

(e) means for attaching said holder to said housing for movement therewith;

(f) means for mounting the deburring tool on said holder for movement therewith and for movement with respect thereto;

(g) a tool mounted by said last-named mounting means for translational movement with respect to said holder in one plane and for movement with respect to said holder in a second plane normal to said one plane;

(h) means for resiliently biasing the tool outwardly from said holder in a direction parallel to the direction of translational movement in said one plane;

(i) means for imparting a predetermined movement to said housing; and

(j) means for resiliently maintaining the tool in a predetermined position with respect to said holder in said second plane.

4,138,927

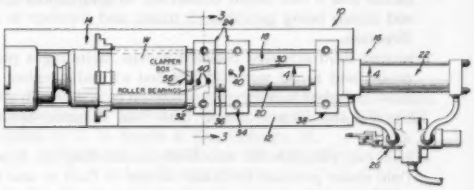
INTERNAL GROOVING MACHINE

Ira B. Hamil, 3301 W. County Rd., Odessa, Tex. 79762

Filed Apr. 1, 1977, Ser. No. 783,852

Int. Cl.[2] B23D *1/30, 3/06*

U.S. Cl. 90—24.3 **2 Claims**



1. A grooving machine, comprising, in combination:

(a) a frame;

(b) work holder means mounted on the frame for supporting a workpiece; and

(c) cutter means mounted on the frame for forming a groove

on the workpiece, the cutter means including, in combination:

(1) ram means mounted on the frame for reciprocating movement relative to the work holder means and supporting a cutting tool for engagement with the workpiece; and

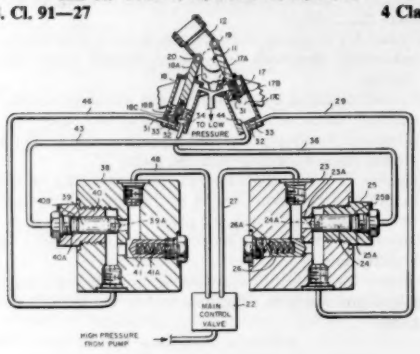
(2) ram support means mounted on the frame and reciprocatingly supporting the ram means for rotating the ram means during reciprocating movement of the ram means, the ram means including a ram member and a linear motor connected to the ram member, the motor being arranged for selectively reciprocating the ram member relative to the ram support means, and the ram member having a substantially cylindrical surface provided with a helical groove, with rotatable pin means being included in the ram support means for engaging in the groove and causing rotation of the ram member during reciprocating movement of the ram member, the ram support means including two coaxially disposed pedestals arranged for receiving the ram member, and a stand arranged for supporting the linear motor, the motor mounted on the stand coaxial with and connected to the ram member for selectively reciprocating same, the pin means including roller bearings mounted on the pedestals, each of the pedestals being provided with at least one of the roller bearings, the roller bearings being arranged for engaging the groove provided in the ram member.

4,138,928

FLUID ACTUATED APPARATUS

John S. Pilch, Ware, Mass., assignor to Ware Machine Service Inc., Ware, Mass.

Filed Feb. 11, 1977, Ser. No. 767,942
Int. Cl.[2] F01B *1/04;* F15B *13/06, 15/22*
U.S. Cl. 91—27 4 Claims



1. Apparatus of the character described comprising

a member mounted for pivotal movement,

a source of fluid under pressure,

a first fluid actuated cylinder means including a a piston means and a rod means connected to said member, said rod means being movable to rotate said member in one direction,

a second fluid actuated cylinder means including a piston means and a rod means connected to said member and movable when said member is rotated in said one direction by said rod means of said first fluid actuated cylinder means,

a main control valve for selectively controlling the flow of fluid under pressure from said source of fluid to said first and second fluid actuated cylinder means,

a first restricting valve means comprising a first fluid restricting piston means operative solely by fluid under pressure,

first fluid conduit means for providing communication directly between said main control valve means and solely one end of said first fluid restricting piston means, for causing movement of said first fluid restricting piston means from its closed position to its open position,

second fluid conduit means for providing communication between said first fluid restricting valve means and the piston end portion of said first cylinder means,

first fluid restricting orifice means for providing communication between said first fluid conduit means and said second fluid conduit means when said first fluid restricting piston means is in closed position,

a plunger means associated with the piston means of said second cylinder means,

a first port in the piston end of said second cylinder means which is closable by said plunger means as the piston of said second cylinder means approaches the end of its retracting movement,

a reduced size second port in the piston end of said second cylinder means,

a third port in the piston end portion of said second fluid actuated cylinder means,

third fluid conduit means for providing communication for fluid to pass from the piston end portion of the second cylinder means thru said third port directly and solely to the other end of said first fluid restricting piston means for causing movement of said first fluid restricting piston means to closed position when the piston means of said second cylinder means approaches the end of its retracting movement, whereby throughout the complete outward power movement of the piston of said first fluid actuated cylinder means said one end of said first fluid restricting piston means is responsive to and slidably movable by pressurized fluid from said source of fluid under pressure through said first conduit means and the other end of said first fluid restricting piston means is responsive to pressurized fluid from said second second cylinder means through said third conduit, whereby throughout the complete outward power movement of the piston of said first fluid actuated cylinder means said first fluid restricting piston means is simultaneously responsive to and slidably movable by pressurized fluid and whereby the flow of fluid from said source of fluid under pressure en route from said first conduit means to said second conduit means and thence to the piston end of said first cylinder means is restricted by said first restricting piston means, thereby reducing the linear velocity of the rod of said first cylinder means,

a second restricting valve means comprising a second fluid restricting piston means operated solely by fluid under pressure,

sixth fluid conduit means for providing communication directly between said main control valve means and solely one end of said second fluid restricting piston means for causing movement of said second fluid restricting piston means from its closed position to its open position,

fifth fluid conduit means for providing communication between said second fluid restricting valve means and the piston end portion of said second cylinder means,

second fluid restricting orifice means for providing communication between said sixth fluid conduit means and said fifth fluid conduit means when said second fluid restricting piston means is in closed position,

a plunger means associated with the piston means of said first cylinder means,

a fourth port in the piston end of said first cylinder means which is closable by said plunger means as the piston of said first cylinder means approaches the end of its retracting movement,

a reduced size fifth port in the piston end of said second cylinder means,

a sixth port in the piston end portion of said first fluid actuated cylinder means, and

fourth fluid conduit means for providing communication for fluid to pass from the piston end portion of the first cylinder means thru said sixth port directly and solely to the other end of said second fluid restricting piston means for

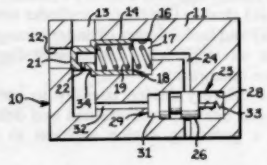
causing movement of said second fluid restricting piston means to closed position when the piston means of said first cylinder means approaches the end of its retracting movement, whereby throughout the complete outward power movement of the piston of said second fluid actuated cylinder means said one end of said second fluid restricting piston means is responsive to and slidably movable by pressurized fluid from said source of fluid under pressure through said sixth conduit means and the other end of said first fluid restricting piston means is responsive to pressurized fluid from said first cylinder means through said fourth conduit means, whereby throughout the complete outward power movement of the piston of said second fluid actuated cylinder means said second fluid restricting piston means is simultaneously responsive to and slidably movable by pressurized fluid whereby the flow of fluid from said source of fluid under pressure en route from said sixth conduit means to said fifth conduit means and thence to the piston end of said second cylinder means is restricted by said second fluid restricting piston means, thereby reducing the linear velocity of the rod of said second cylinder means.

4,138,929

PRESSURE RESPONSIVE CHECK VALVE

Wayne A. Peterson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 17, 1977, Ser. No. 842,700
Int. Cl.² F15B *13/042*
U.S. Cl. 91—446 **4 Claims**



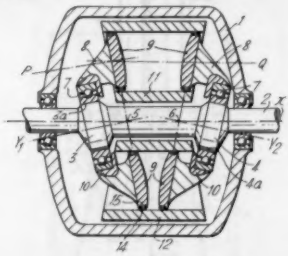
1. A pressure responsive check valve comprising:
a body having an inlet port and an outlet port;
a valve element positioned within said body and being movable between a first position at which the inlet port is blocked from communication with the outlet port and a second position at which the inlet port is in communication with the outlet port, said element being movable to said second position in response to the fluid pressure in the inlet port being greater than the fluid pressure in the outlet port;
a first chamber at one end of said valve element;
an orifice connecting the outlet port with said first chamber;
a vent passage connected to said first chamber;
a spool positioned in said vent passage and being movable between a first position at which flow through the vent passage is blocked and a second position at which the first chamber is vented;
a second chamber at one end of the spool; and
a passage connecting the second chamber with the outlet port independently of said orifice.

4,138,930

PISTON AND CYLINDER MACHINES

Russell J. Searle, 20 Park St., Windsor, England

Filed May 5, 1973, Ser. No. 574,713
Claims priority, application United Kingdom, May 14, 1974, 21273/74; May 6, 1974, 19784/74; Nov. 6, 1974, 47989/74; Nov. 21, 1974, 50496/74; Nov. 26, 1974, 51163/74; Dec. 5, 1974, 52629/74
Int. Cl.² F01B *3/00*; F02B *57/00*
U.S. Cl. 92—70 **19 Claims**



1. A machine comprising:
(a) a cylinder having a straight-sided bore spaced from a first axis,
(b) a piston assembly including a piston disposed within said cylinder bore to form a chamber therein, the piston having a recess around its periphery, a single piston ring mounted partly in said recess so that the piston ring can move, as a whole, laterally with respect to said piston towards and away from said first axis, the outer periphery of the piston ring having the shape of an equatorial region of a sphere of a radius substantially equal to that of the cylinder bore, the piston assembly further including a connecting member rigidly connected to the piston and restraining means for opposing movement of said piston in relation to said cylinder about said first axis; and
(c) a support member mounted to provide relative rotation between the support member and said cylinder about said first axis, the support member being inclined to said first axis along a second axis, said connecting member of the piston assembly being rotatably coupled to said support member to provide relative rotation between the support member and the piston assembly about said second axis whereby relative rotation of the support member and cylinder about the first axis and of the support member and the piston assembly about the second axis is accompanied by reciprocation of said piston along an arcuate path within said cylinder, said equatorial region of said sphere comprising sufficient width on either side of the equatorial plane that, throughout said reciprocation, the piston ring remains in contact with the cylinder wall along a continuous line of contact which is a circumference of the sphere and, along said line of contact, the cylinder wall is tangential to the sphere.

4,138,931

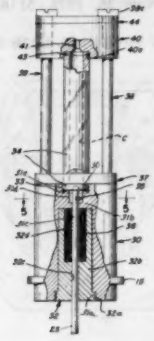
PUMP

William G. Hermann, Arlington Heights; Manuel I. Martin, Hoffman Estates, and Rolf Meyer, Des Plaines, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jul. 11, 1975, Ser. No. 595,109
Int. Cl.² F01C *9/00*
U.S. Cl. 92—87 **3 Claims**

1. A hydraulic displacement pump comprising an upstanding housing having a closed, elongated and substantially vertically disposed cylindrical cavity formed therein; an elongated rod of predetermined length and diameter constituting a plunger disposed through the lower end of said cylindrical cavity and axially upwardly at least partially into said cavity, means for

effecting up and down reciprocating movement of said rod to displace liquid within said cavity; an outlet port disposed at the upper end of said cavity through which the liquid is discharged by upward movement of said rod; an inlet port disposed adjacent the lower end of said cavity and tangentially relative to the internal surface of said cylindrical cavity; means for supplying a fluid flow to said inlet port to thereby effect a swirling upwardly rising vortical motion of the fluid through the space between said axially elongated rod and the internal surface of said cylindrical cavity to scrub said internal surface and said rod; and valve means coupled with said inlet and outlet ports to effect selective opening and closing of same in association with the reciprocating movement of said rod.

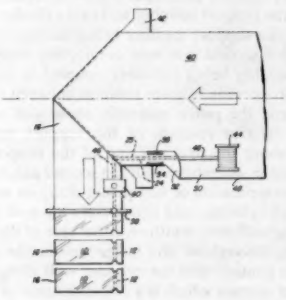


4,138,932

PROCESS FOR PRODUCING RECLOSABLE BAGS

John C. Mowli, 2032 W. Jarvis, Chicago, Ill. 60645, and Harry Bala, 2259 N. Kedzie, Chicago, Ill. 60647

Filed Apr. 19, 1977, Ser. No. 788,816
Int. Cl.[2] B31B *19/00, 1/90*
U.S. Cl. 93—35 DS **3 Claims**



1. A method of producing a reclosable bag which comprises the steps of:

feeding to a main folding station a web of heat sealable material;

providing on only one side of the web a continuous length of a metallic closure strip, which is capable of being bent manually and retaining its bent shape;

overlying said closure strip over said web adjacent only one longitudinal side of said web and inwardly a sufficient distance (a) to permit a portion of the web adjacent to said longitudinal side to be folded over the metallic closure strip, and (b) to space the metallic closure strip from the fold line formed thereby, so that a subsequent transverse heat sealing step provides heat seals between the closure strip and said fold line, on both sides of the resulting bag;

folding said adjacent web portion over the closure strip;

heat sealing said overfolded web portion to said web to form a pocket in which said closure strip is received;

folding the web longitudinally at said main folding station so that the side of said web opposite the one side is brought adjacent the heat sealed portion;

punching openings through said overfolded web portion and closure strip;

conveying said folded web to a cutting station; and

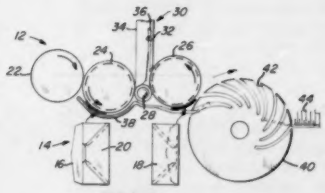
thereafter heat sealing and cutting said web transversely of said folded web through the punched openings to form a reclosable bag, with heat seals being provided thereby on both sides of the bag including the side portions between the closure strip and said fold line.

4,138,933

APPARATUS FOR GUMMING AND FOLDING OPEN END ENVELOPES

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed May 19, 1977, Ser. No. 798,383
Int. Cl.[2] B31B *19/26*
U.S. Cl. 93—61 R **3 Claims**



1. A method for converting a side seam envelope machine to an open end envelope machine in which said side seam envelope machine includes a transfer cylinder for engaging and conveying a side seam envelope with an open closure flap, a delivery cylinder positioned in spaced relation to said transfer cylinder and a closure flap folding cylinder positioned between said transfer cylinder and said delivery cylinder, said delivery cylinder and said closure flap folding cylinder arranged to fold said closure flap and said delivery cylinder arranged to transfer said side seam envelope with said closure flap folded to a delivery device comprising,

moving said delivery device laterally to provide a space between said delivery cylinder and said delivery device,

positioning a gumming device adjacent to said delivery cylinder,

said gumming device arranged to apply a strip of adhesive to the bottom flap of a side seam envelope, and

positioning a folding means in said space between said delivery cylinder and said delivery device,

said folding means arranged to fold said bottom flap of a side seam envelope into overlying relation with said folded side flaps.

4,138,934

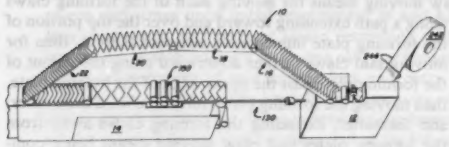
ENVELOPE FORMING ASSEMBLIES

Victor Palkovic, Westchester, Ill., assignor to Garden City Envelope Company, Chicago, Ill.

Filed May 31, 1977, Ser. No. 802,249
Int. Cl.[2] B31B *21/02*
U.S. Cl. 93—63 R **15 Claims**

1. An improved envelope forming assembly comprising, in combination, a first device having at least a blank exit position, a second device having at least a blank entry position, said blank exit and blank entry positions on said respective devices being inaccessible for direct blank feeding from said first device to said second device, a blank transporting member interconnecting said devices facilitating blank transfer therebe-

tween, wherein at least a portion of said blank transporting member is driven by one of said devices, and means for synchronizing the operation of said first and second devices



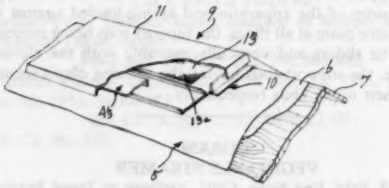
whereby movement and positioning of envelope blanks in transit from said first device to said second device may be accurately regulated.

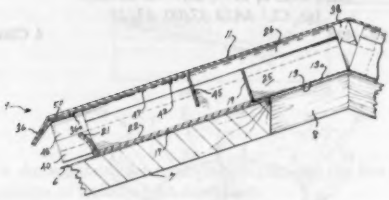
4,138,935

VENTILATOR

Louis L. Vallée, 6392 Maubourg Ave., Montreal, Quebec, Canada (H1M 2C8)

Filed Sep. 12, 1977, Ser. No. 832,644
Claims priority, application Canada, Oct. 13, 1976, 263315
Int. Cl.[2] F24F *7/02, 13/02*
U.S. Cl. 98—42 A **9 Claims**





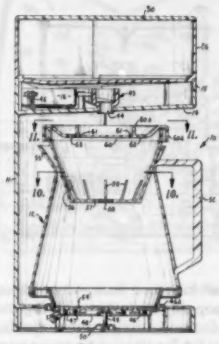
1. A ventilator for roofs wherein the roof has a ventilator opening; the said ventilator including a base member and a cover member fitted over the base member; the base member having double-walled side base flanges and inwardly disposed, upstanding longitudinal side walls, a wind breaker at each end and extending between the side walls, a baffle located inwardly of each of said wind breakers, an upper base wall joining one wind breaker and baffle at each end and lying on a lower base wall, the side edges of the upper base wall extending between the walls of the side base flanges and a screened ventilator opening in the lower base wall located centrally between the baffles; the cover member having downturned longitudinal side walls adapted for close fit on the outer surface of the side walls of the base member, an air deflector at each end and extending between the side walls of the cover member, baffles spaced inwardly of the air deflectors and extending between the side walls of the cover member; the said wind breakers and air deflectors together providing restricted openings to the ends of the ventilator, and the baffles of the basemember and cover member together forming a labyrinth passage between the restricted end openings of the ventilator and the screen ventilator opening in the basemember.

4,138,936

COFFEE BREWING MACHINE

James T. Williams, Independence, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed May 20, 1977, Ser. No. 798,891
Int. Cl.[2] A47J *31/10, 31/56*
U.S. Cl. 99—282 **12 Claims**

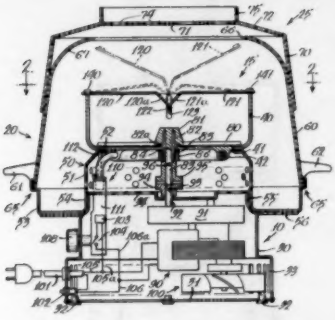


1. A machine for brewing coffee and the like, comprising:
a frame;
a heating well supported on said frame;
means for supplying water to said heating well, said water supplying means including a reservoir on said frame adapted to receive a supply of water and having an outlet for discharging water;
a water tank on the frame located to receive water from the outlet of said reservoir;
flow control means for controlling the passage of water through said outlet in a manner to substantially maintain a preselected water level in said tank;
a conduit extending from said tank to said heating well to deliver water to the latter;
said flow control means including a float member in said tank operable to detect when the water level in the tank is above said preselected level;
said float member is mounted in said tank for pivotal movement about a generally horizontal axis and is normally disposed in a stable position wherein said valve means acts to maintain said outlet open to flow;
said float member presents more surface area on one side of said axis than on the other side thereof, whereby said float pivots away from its stable position when the water level in said tank is above said preselected level;
said valve means acts to substantially close said outlet in response to pivotal movement of said float member away from its stable position;
heating means associated with said heating well for heating the water therein to substantially the boiling temperature, thereby effecting overflow of hot water out of said well;
a downwardly inclined surface on said frame located to receive the hot water overflowing said heating well;
a spout opening in said surface for discharging hot water therefrom in a generally downwardly direction;
a carafe for receiving coffee located generally beneath said spout opening; and
a container for coffee grounds located between said spout opening and carafe to receive hot water from said opening and direct coffee into the carafe.

4,138,937
CORN POPPER

Ralph M. De Weese, Wheeling, Ill.

Filed Feb. 24, 1977, Ser. No. 771,761
Int. Cl.[2] A23L 1/18
U.S. Cl. 99—323.5 13 Claims

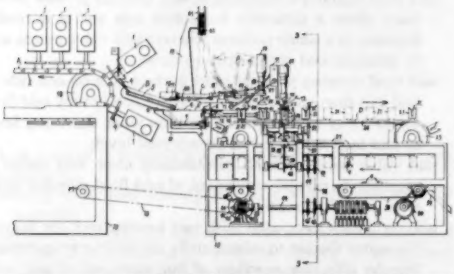


1. A corn popper having a base, an open top pot supported on said base for popping the corn, stirring means within said pot, drive means for said stirring means including a motor in said base, a flexible lid for the pot to cause popped corn to exit the pot at the perimeter thereof, an annular shroud surrounding said cooking pot and at a lower level, said shroud having a downwardly extending wall with perforations and a surrounding chamber of generally U-shaped cross section for collection of popped corn which leaves the open top pot, air passages in said base connecting external air to the perforations in said wall for flow of external air through the collected popped corn, a circulating air fan in said base driven by said motor for inducing said air flow, and an open top storage bin removably attached to said shroud and partially overlying the pot perimeter for guiding popped corn exiting the pot to said chamber while permitting moisture-laden air to leave the corn popper.

4,138,938
APPARATUS FOR PRODUCING THREE-DIMENSIONALLY FORMED CRACKERS

Shuji Kitamura, 6-78, Yamamoto-cho minami, Yao-City, Osaka Perfecture, Japan

Filed Jul. 1, 1977, Ser. No. 812,332
Int. Cl.[2] A21B 1/46; A21C 15/00
U.S. Cl. 99—353 4 Claims



1. An apparatus for producing three-dimensionally formed crackers comprising:

two parallel forming plates spaced apart by a predetermined distance, each of the forming plates having at its upper end a top portion for placing a cracker thereon, projections formed at the opposite ends of the top portion for positioning the cracker and a cutout extending downward from substantially the midportion of the top portion;

a bulging plate substantially midway between the two forming plates, parallel thereto and having an upper edge positioned at a higher level than the lower end of the cutout of each of the forming plates;

two forming claws on the opposite outer sides of said forming plates and at right angles to the forming plates; and

claw moving means for moving each of the forming claws along a path extending toward and over the top portion of the forming plate immediately adjacent thereto, then for moving said claws further downward along the cutout of the forming plate past the upper edge of the bulging plate, then moving the forming claws further toward each other, and thereafter, extending the forming claws away from the forming plates said claw moving means being comprised of:

two vertical motion cams in the form of plate cams disposed on left and right sides of the apparatus and each having a curved cam periphery;

an elevator plate mounted on the main body of the apparatus and vertically movable by the vertical motion cams;

two horizontal motion cams in the form of plate cams disposed on the left and right sides of the apparatus and each having a curved cam periphery, the horizontal motion cams being operative by the same power source as the vertical motion cams in timed relation thereto;

a horizontal guide bar secured to the main body of the apparatus;

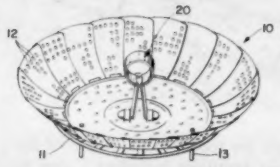
two sliders slidably mounted on the horizontal guide bar and movable by the horizontal motion cams; and

two support rods placed on the elevator plate on the opposite sides of the apparatus and spring-loaded against the elevator plate at all times, the support rods being mounted on the sliders and vertically movable with the elevator plate, the support rods having the forming claws secured to their upper ends respectively.

4,138,939
VEGETABLE STEAMER

Gerald M. Feld, Van Nuys, Calif., assignor to Trend Products Company, North Hollywood, Calif.

Filed Dec. 5, 1977, Ser. No. 857,609
Int. Cl.[2] A47J 37/00, 43/24
U.S. Cl. 99—418 4 Claims



1. In a vegetable steamer comprising a perforated base plate, supporting base legs therefor, a plurality of overlapping, hingedly movable perforated leaves attached thereto, and a handle, the improvement comprising:

(a) a pair of spaced, parallel straps carried by said base plate near the center thereof and lying above said base plate, and

(b) said handle comprising a pair of lifting tabs each passing between a said strap and said base plate, and upwardly extending handle legs connected to each said lifting tab and providing said handle for lifting said steamer, said handle legs being transversely concave and in facing relationship, resilient means connected to said handle legs at their upper ends for urging said handle legs apart, said handle legs diverging outwardly from their upper ends, said handle being detachable from said base by urging said handle legs toward each other and withdrawing a said tab from a said strap, said handle legs being in alignment when said tabs extend through said straps, the upper ends of said

handle legs engaging upon said handle legs being moved toward each other, the distance between the lower end of one of said handle leg and the outer end of the tab on the other said handle leg being greater than the distance between said straps upon initial engagement of said handle legs upper ends, said resilient means permitting said one handle leg to shift laterally following said engagement to effect misalignment of said handle legs and entry of a lateral edge of each handle leg into the concavity of the other said handle leg, the distance between the lower end of one said handle leg and the outer end of the tab of the other said handle leg being no greater than the distance between said straps when said handle legs are moved to said last mentioned position.

4,138,940

APPARATUS FOR REMOVING CALYXES AND THE LIKE FROM FRUITS

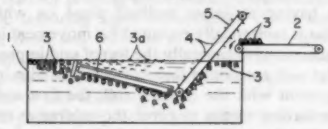
Noriomi Fujii, Isahara, Japan, assignor to Kewpie Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1977, Ser. No. 809,932

Claims priority, application Japan, Jul. 15, 1976, 51-83494; Oct. 29, 1976, 51-129383

Int. Cl.[2] A23N *15/02*; A47J *21/00*

U.S. Cl. 99—636 **7 Claims**



1. An apparatus for removing calyxes and the like from the pericarps of fruits, which comprises:

a tank containing therein a fluid such as water into which the fruits with adhering calyxes and the like are fed;

horizontally extending roll means submerged in the fluid of the tank and adapted for catching calyxes and the like;

a conveyor for guiding the fruits to be processed to said rollers;

wherein said roll means includes a plurality of pairs of rotatably supported calyx removing rolls which are inclined in the longitudinal direction thereof relative to the horizontal direction, rolls of each pair being substantially parallel in side by side arrangement, in contact with each other and rotated in opposite directions, and said inclination being made in such a manner that the outlet part of the rolls is higher than the inlet part thereof; and

driving means for causing opposite rotation of said rolls of each pair while maintaining their inclination states, the fruits being supplied under said inlet part of the rolls by the conveyor such that calyxes and the like of the fruits moving upward along the underside of the rolls while contacting therewith are caught between the rolls of each pair and stripped off by clamping and plucking action during movement of the fruits, and thus processed fruits are removed at an outlet part of the rolls means.

4,138,941

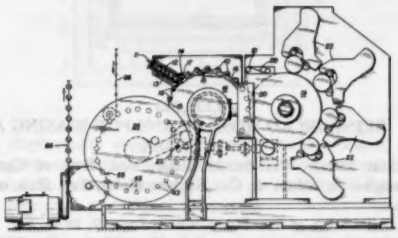
CONTINUOUS GRAVITY FED CAN PRINTER AND TRANSFER APPARATUS

Danny L. McMillin, Golden, Colo., and Enn Sirvet, Washington Township, Bergen County, N.J., assignors to Coors Container Company, Golden, Colo.

Continuation of Ser. No. 619,597, Oct. 6, 1975, abandoned. This application May 31, 1977, Ser. No. 801,595

Int. Cl.[2] B41F *17/20*; B65G *47/91*

U.S. Cl. 101—40 **10 Claims**



1. In a continuous can printer and transfer apparatus of the kind having a rotating mandrel wheel carrying cans being decorated and having a rotating transfer wheel for transferring the decorated cans from the mandrels of the mandrel wheel to the pins of a pin chain conveyor, an improved transfer wheel comprising:

(a) a hub driven in time with the mandrel wheel on an axis substantially parallel to the axis of the mandrel wheel;

(b) an angled shaft carried by the hub, the angle of the shaft having a radial component and an axial component relative to the axis of the hub;

(c) a vacuum head and suction cup assembly slidably mounted for movement along the axis of said angled shaft in combined radial and axial directions with respect to said hub, the axis of the vacuum head and suction cup maintaining a fixed angular relationship to the axis of the hub;

(d) means for moving said vacuum head and suction cup assembly along the angled shaft, displacing the assembly both radially and axially with respect to the hub for tracking the path of a mandrel on said mandrel wheel during the transfer of a can from the mandrel to the vacuum head and suction cup assembly, and

(e) vacuum source means supplying vacuum to said vacuum head at predetermined points of transfer wheel rotation, the vacuum holding the transferred can on the suction cup during a portion of transfer wheel rotation.

4,138,942

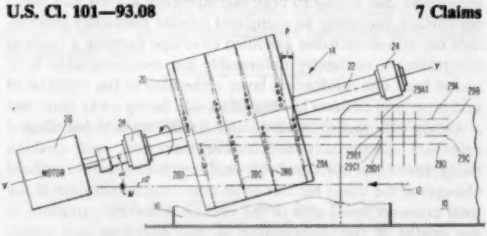
PRINTING DEVICE FOR PRINTING ON A CONTINUOUSLY MOVING FORM

Ronald Hutley, Lansdale, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 2, 1977, Ser. No. 821,252

Int. Cl.[2] B41J *9/12*

U.S. Cl. 101—93.08 **7 Claims**



1. A multi-line printer for simultaneously printing a plurality of lines of type on a moving print receiving medium compris-

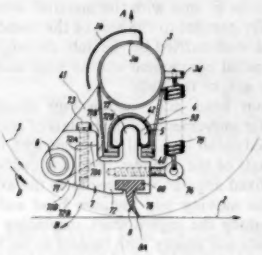
ing, a continuously rotatable print drum having a plurality of peripherally arranged helical bands of type fonts, one font band for each print line on the print receiving medium, means for moving a print receiving medium continuously past said drum which has its axis of rotation positioned in a plane parallel to the plane of said print receiving medium and at an acute angle off the normal to the path of movement of said print receiving medium and a plurality of print hammers, one for each band of type font on the drum.

4,138,943

REINFORCED HOSE MEANS FOR BIASING A SQUEEGEE

Mathias Mitter, Verl-Sende-Mitter, Fed. Rep. of Germany, assignor to Mitter & Co., Schloss Holte, Fed. Rep. of Germany

Continuation of Ser. No. 479,948, Jun. 19, 1974, Pat. No. 4,055,119. This application Feb. 28, 1977, Ser. No. 772,482
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1973, 2331428
The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.
Int. Cl.[2] B41F *15/42, 15/46*
U.S. Cl. 101—119 **19 Claims**



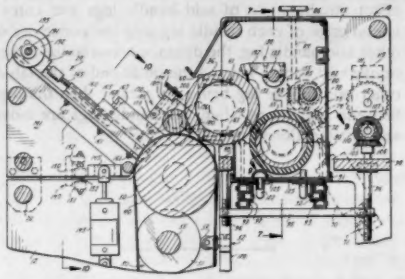
1. In a screen printing machine, a combination comprising an elongated liquid-permeable stencil having endless internal and external surfaces; means for moving said stencil so as to engage successive increments of a web of material to be treated along a region of contact which extends lengthwise of said stencil; a movable holder having one side facing towards said region of contact and another side which faces away from said region of contact and is provided with a bar-shaped extension extending lengthwise of said stencil; stationary support means for supporting said holder and having a portion located in the interior of said stencil; a squeegee mounted on said holder at said one side thereof; biasing means interposed between said support means and said holder to urge said squeegee against said internal surface, including an elongated tubular elastically deformable but non-stretchable gas-filled envelope forming a cushion comprising a resiliently deformable but nonstretchable hose and at least one reinforcing layer embedded in the material of said hose, said cushion having a first side facing away from and a second side facing towards and straddling said bar-shaped extension substantially coextensive therewith, said cushion being inwardly deformed by said extension with resultant changes in the shape but due to its non-stretchability not in the total cross-sectional area of the cushion whereby variations in the depths of the deformation of said envelope and consequently of said cushion result in corresponding variations in the biasing action; and means confining said envelope to said one side against yielding in direction away from said extension.

4,138,944

PRINT MODULE

Frank M. Biggar, III, Angola, N.Y., assignor to Frank M. Biggar, Jr., Hamburg, N.Y.

Filed Jul. 30, 1976, Ser. No. 710,148
Int. Cl.[2] B41F *13/20, 13/30, 13/44*
U.S. Cl. 101—247 **22 Claims**



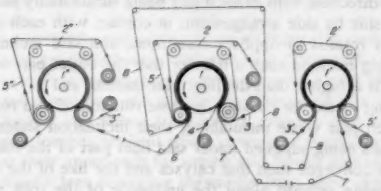
1. A rotary printer for printing a traveling web having a frame, means in the frame for receiving a traveling web of paper therein, including an impression cylinder over which the traveling web of paper may be positioned, a print cylinder mounted above the impression cylinder to print the web received therebetween, a first subframe having an ink fountain removably supported therein, a fountain roll mounted to cooperate therewith, and a transfer roll, the transfer roll being mounted between the fountain roll to receive ink therefrom and cooperating to transfer ink to the print cylinder, the print cylinder, impression cylinder, and transfer roll being mounted with their axes parallel and being positionable to establish contact between the print cylinder and the transfer roll and between the print cylinder and the impression cylinder simultaneously, the print cylinder being mounted on a second subframe having an upper inclined plane on which said print cylinder is reciprocally mounted for movement into and out of engagement with generally the top of said impression cylinder and the web positioned therebetween and also into and out of engagement with the transfer roll, the first and second subframes having means to pivot the subframes relative to said frame to selectively engage and disengage the transfer roll, print cylinder, and impression cylinder, said second subframe being pivotal at a location to move said print cylinder generally downwardly and upwardly in an arced path toward and away from said impression cylinder.

4,138,945

SIMULTANEOUS HEAT TRANSFER PRINTING AND EMBOSSING METHOD

Thomas Rejto, 19 Homestead Rd., Greenwich, Conn.

Continuation of Ser. No. 597,562, Jul. 21, 1975, abandoned. This application May 16, 1977, Ser. No. 797,537
Int. Cl.[2] B41M *5/26;* **D06P** *7/00*
U.S. Cl. 101—470 **6 Claims**



1. A method of continuously and simultaneously printing and surface texturing a thermoplastic fabric which comprises the steps of simultaneously

(a) passing the fabric over a roller while the fabric is in superposed relation with
(i) a foraminous texturing sheet having foramina therein and having at least one face thereof of surface texture to be imparted to the fabric and with
(ii) a heat transfer printing sheet bearing a sublimable dye with the texturing sheet between the fabric and with the said face of the texturing sheet adjacent the fabric,
(b) holding the superposed fabric and the texturing and printing sheets against the roller, and
(c) maintaining the roller at a temperature sufficiently high to raise the temperature of the superposed fabric and printing sheet held thereagainst to a value between 340° and 430° F., transferring at least part of the dye by sublimation through the foramina of the texturing sheet to the fabric and texturing the fabric with the texturing sheet; and, subsequently, carrying out simultaneously the further steps of
(d) passing the texturing sheet over a second roller while the texturing sheet is in superposed relation with a second thermoplastic fabric,
(e) holding the superposed texturing sheet and second fabric against said second roller, and
(f) maintaining said second roller at a temperature sufficiently high to raise the temperature of the superposed texturing sheet and second fabric held thereagainst to a value between 340° and 430° F.,
transferring at least part of the dye transferred from the printing sheet to the texturing sheet to the second fabric and texturing the second fabric.

6. A method of simultaneously printing and partially surface texturing a thermoplastic fabric which comprises the steps of simultaneously
(a) placing the fabric in a transfer printing apparatus while the fabric is in superposed relation with
(i) a foraminous texturing sheet having foramina therein and having in at least one face thereof a surface texture to be imparted to the fabric and with
(ii) a heat transfer printing sheet bearing a sublimable dye, with the texturing sheet between the fabric and the printing sheet and with the said face of the texturing sheet adjacent the fabric, with both said fabric and said printing sheet extending in overlapping relation beyond the limits of said texturing sheet,
(b) maintaining the superposed fabric and the texturing and printing sheets
for 5 to 40 seconds in the transfer printing apparatus which is heated to a temperature sufficiently high to raise the temperature of the superposed fabric and printing sheet held thereagainst to a value between 340° and 430° F., transferring the dye by sublimation to the fabric from the printing sheet extending beyond said texturing sheet; and transferring at least part of the dye by sublimation through the foramina of the texturing sheet, and partially texturing the fabric with the texturing sheet.

4,138,946

IGNITION VOLTAGE GENERATOR FOR PROJECTILE DETONATORS AND THE LIKE

Günter Postler, Röthenbach; Wilhelm Fürst, Buchberg; Norbert Liebl, Röthenbach, and Werner Rudenauer, Roth, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nüremberg, Fed. Rep. of Germany

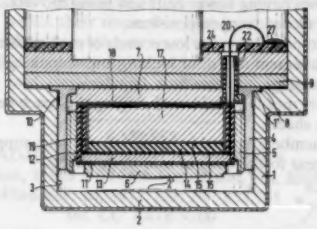
Filed Jan. 3, 1978, Ser. No. 866,540

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 7702073[U]

Int. Cl.² F42C *11/02*

U.S. Cl. 102—210 **15 Claims**

1. In an ignition or firing voltage generator for projectile detonators and the like; including a piezoceramic cell forming an ignition voltage source for an igniter; and a solid body adapted to have the inertial force thereof influence said cell to generate an ignition voltage upon exceeding of a minimum acceleration during the firing sequence of a projectile, the improvement comprising: a generally cylindrical support member, said piezoceramic cell and said solid body being arranged within said support member; an igniter housing having a tubularly-shaped portion, said support member being



axially displaceably supported in said tubular portion; and securing means restraining said support member whereby the bottom of the former is arranged at a predetermined distance from a base plate of said igniter housing.

4,138,947

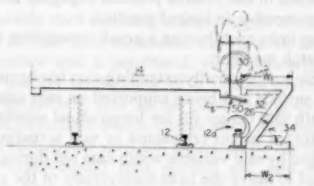
NOISE BARRIER

William H. Pickett, 44 Lake Rd., Framingham, Mass. 01701

Filed Apr. 7, 1977, Ser. No. 785,454

Int. Cl.² G10K *11/04*

U.S. Cl. 104—1 R **6 Claims**



1. A sound control system for a moving rail vehicle comprising a closed road bed surface upon which the rails are mounted, and an upstanding closed, sound barrier element arranged to co-act with the moving rail vehicle to block lines of sight from the sound source beneath the vehicle to the exterior, said upstanding barrier and said moving vehicle including overlapping portions, defining a clearance path between the vehicle and the barrier constituting substantially the only opening through which sound might escape toward the position of a listener, the overlapping portion of said vehicle comprising a longitudinally elongated element protruding sideways from the side of the vehicle, and the overlapping portion of said barrier element defining a surface extending generally parallel to the direction of elongation of said vehicle element, said thus defined clearance path presenting a bend to the emission of noise from beneath the vehicle, and an expense of sound absorbent material disposed adjacent said bend, positioned to absorb and thereby attenuate sound energy escaping through said bend.

4,138,948

RAILWAY HOPPER CAR SIDE DOOR ACTUATING MECHANISM

Louis G. Korolis, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 27, 1977, Ser. No. 791,348

Int. Cl.² B61D *7/08, 7/18, 7/26, 49/00*

U.S. Cl. 105—251 **11 Claims**

1. A hopper car having a longitudinally extending center sill, slope sheets within said car enclosing said center sill and

extending downwardly and outwardly relative to said center sill and providing at their outer ends side discharge openings,

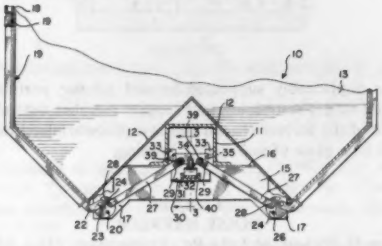
doors pivotally mounted at their upper ends on said car for each discharge opening,

said doors having lower ends and being movable outwardly from closed to open positions,

a keeper member on the lower ends of each of said doors, the improvement of a door locking and unlocking mechanism comprising;

a support means on said car bridging the space between said slope sheets,

latch members rotatably mounted on said support means adjacent to the ends of said slope sheets,



each of said latch members having keeper members engaging means in one rotated position engaging the respective keeper member in locked position,

actuating links each having a crank connection to a respective latch member,

a shiftable longitudinally extending cam bar having an undulated surface and being supported on said support means beneath said center sill for longitudinal movement, and

cam actuated means connected to said actuating links and engaged by said variable width cam bar during movement thereof to move the links transversely of the car and thus to rotate said latch members between locked and unlocked positions relative to said keeper means upon selective movement of said cam bar.

4,138,949

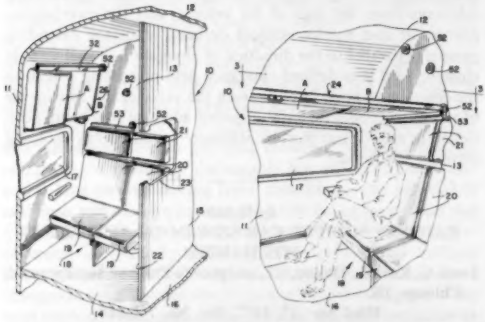
SLEEPING COMPARTMENT UPPER BERTH

Jack E. Gutridge, Dyer, and Keith J. Hallam, Merrillville, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 669,927, Mar. 24, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 850,881

Int. Cl.[2] B61D *1/02;* **A47C** *17/38*

U.S. Cl. 105—315 **9 Claims**



8. A railway passenger car including a compartment having an outer car side wall, a pair of laterally extending longitudinally spaced partition walls,

a divider wall arrangement connected to said partition walls,

said divider wall arrangement extending longitudinally and including an opening into said compartment,

laterally extending seats positioned adjacent said partition walls and longitudinally spaced relative to each other, the improvement comprising;

an upper berth including,

a shell-like berth pan structure,

means hingedly connecting said pan structure to said side wall for movement from a stored position against said wall to a horizontal use position,

said pan having a central relatively deep dished portion and at least one relatively shallower dished portion at an end of said pan and including a generally vertical wall having a flat upper edge portion about the periphery thereof,

said at least one shallow portion in the use position of said berth providing increased headroom for passengers seated on said seats,

headrests secured to said partition walls above said seats, said headrests supporting opposite ends of said pan in said use position, and

means on said pan releasably locking said pan in the use and stored position on said partition walls.

4,138,950

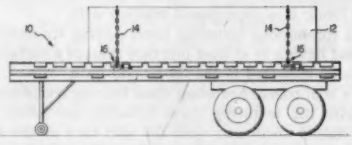
ADJUSTABLE LOAD SECUREMENT SYSTEM FOR FLAT BED VEHICLES

Gerald R. Mooney, 3080 Eldogor La., New Castle, Pa. 16105, and Louis A. Mooney, 1002 Ryan Ave., New Castle, Pa. 16101

Filed Mar. 18, 1977, Ser. No. 779,003

Int. Cl.[2] B60P *7/10, 7/16;* **B61D** *45/00, 49/00*

U.S. Cl. 105—482 **4 Claims**



1. A positionably adjustable load securement system for use in conjunction with a flat bed vehicle, comprising:

a first structural member secured to and extending laterally from the lateral edge of said vehicle and being offset downwardly from the bed of said vehicle;

a plurality of guide members vertically positioned and secured at uniformly spaced intervals along the lateral edge of said vehicle and above said first structural member, each of said guide members having a slotted lower face and together forming a continual channel; and

an anchor assembly having a base slidable on said first structural member beneath said guide members, an upwardly projecting rib complementary to said guide member slots and of a length greater than the separation between adjacent ones of said guide members, and a pivotally mounted latch plate movable between a first position in which said plate projects between adjacent guide members and a second position in which said plate is clear of said guide members.

4,138,951

PORTABLE, COLLAPSIBLE TABLE

Marguerite D. Nelson, 310 NW. 5th Ave., Portland, Oreg.

Continuation-in-part of Ser. No. 792,691, May 2, 1977. This application Dec. 9, 1977, Ser. No. 859,046

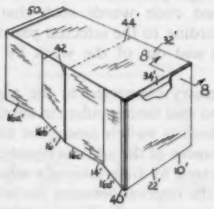
Int. Cl.[2] A47B *3/00*

U.S. Cl. 108—115 **1 Claim**

1. A portable, foldable table comprising

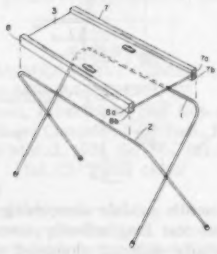
(a) an open ended tubular pedestal member having top and bottom edges, the bottom edge being arranged for engagement on a supporting surface,

(b) said pedestal member including front and rear walls joined to opposite side walls,
(c) said walls having bend line connections for shaping said pedestal member between folded and unfolded conditions,
(d) said front and rear walls each comprising a plurality of panels connected together by bend lines and being angular to each other in an accordion shape providing vertical structural strength and also providing inwardly extending recesses forming foot spaces for a person standing at the table,
(e) the juncture of at least one of said side walls with respective adjacent panels of said front and rear walls in an unfolded condition of the table comprising an acute angular corner,



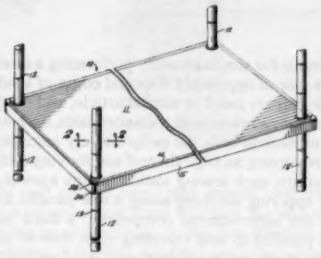
(f) said front and rear walls being foldable into flat condition on said bend lines independent of each other in spaced relation in a folded condition of the table,
(g) and a top wall on said pedestal member arranged to form an enlarged working surface,
(h) said top wall including at least one downturned end tab projecting down into said acute angular corners in the unfolded condition of the table and being of a selected length to fit snugly between said front and rear walls at said corners to hold said pedestal member firmly in unfolded condition,
(i) said top wall having an intermediate bend line whereby said top wall comprises a single layer unfolded panel in an unfolded condition of the table and overlapping panels in a folded condition of the table.

4,138,952
COLLAPSIBLE TEA TABLE SYSTEM
Hollis C. Hodson, P. O. Box 114, Amo, Ind. 46103
Filed Jun. 10, 1977, Ser. No. 805,403
Int. Cl.² A47B 3/02
U.S. Cl. 108—116 **4 Claims**



1. An improved tea table tray system, for use on foldable cross-legged stands having complementary legs interconnected by upper crossbars which are moved apart whenever supporting a top, and wherein said tray system improvement comprises:
a. a flat tray-bed having a rail rigidly attached along each of two parallel edges of said tray-bed, which said rails jut below said tray-bed for detaining said stand crossbars whenever said crossbars are moved to a first support position beneath said tray-bed whereat said crossbars are arrested by abutting said rails;
b. at least one aperture provided through said tray-bed inward of each said rail; and
c. a deformable hangbutton inserted into each said aperture, which said hangbuttons depend from said tray-bed for detaining said stand crossbars whenever said crossbars are moved to a second support position beneath said tray-bed whereat said crossbars are arrested by abutting said hangbuttons, and furthermore, which said hangbuttons may be rotated within their respective said apertures for locking said crossbars beneath said tray-bed and abutting said rails in said first support position, and for locking said crossbars beneath said tray-bed and abutting said hangbuttons in said second support position.

4,138,953
ADJUSTABLE SHELF ASSEMBLY
Philip Tashman, 11020 SW. 75th Ct., Miami, Fla. 33156
Filed Sep. 16, 1977, Ser. No. 833,761
Int. Cl.² A47B 9/00
U.S. Cl. 108—144 **4 Claims**

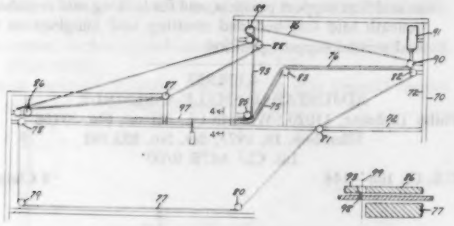


1. An adjustable shelf assembly comprising, in combination, a rectangular formed sheet metal shelf having a flat horizontal supporting surface and a peripheral, right-angularly down-turned skirt portion terminating in a comparatively short, in-turned flange portion, four corner posts having cylindrical outer surfaces, a synthetic plastic corner block member at each corner of said rectangular shelf and embraced by the underside thereof, said down-turned skirt portion and said in-turned flange portion, each of said corner block members having a circular, tapered, through opening coaxial with a circular opening in said flat supporting surface of said shelf for the reception therethrough of one each of said corner posts, a radially-resilient, split-ring taper lock retainer for each of said corner block members, each having an outer frusto-conical surface conforming with the tapered inner surface of its associated block member and an internal cylindrical surface the diameter of which conforms with the diameter of its associated corner post, a circular bead extending radially inwardly of the internal cylindrical surface of each of said split-ring taper lock retainers, and a plurality of peripheral grooves spaced along each of said corner posts and operative to interfittingly receive the circular beads of one each of said split-ring taper lock retainers, selectively, for securing them in place therealong upon said corner block members being fitted down over their respective taper lock retainers in wedging relation, whereby said shelf can be secured in adjusted position along said corner posts, said circular openings in said shelf supporting surface being of a slightly greater diameter than the internal diameter of said block member through openings at the upper ends thereof, said block members being integrally formed with peripheral, annular lips extending outwardly of the upper end thereof and being of such size as to slidingly fit within one each of said corner openings flush with the upper surface of said horizontal shelf supporting surface, the axial length of each block member being slightly less than the distance between the facing inner surfaces of said horizontal shelf supporting surface and said in-turned flange portion, a flat, right-angular corner plate slidingly receivable between the lower end of each of said block members and said inner surface of said in-turned flange, and means extending through said in-turned flanges and said corner plates for locking said block members in place.

4,138,954
DEVICE FOR SIMULTANEOUSLY STIFFENING AND HEMMING DRAPERY PANELS

Stanley Levenstein, Woodmere, N.Y., assignor to Home Curtain Corp., New York, N.Y.

Filed Jul. 22, 1977, Ser. No. 818,158
Int. Cl.[2] D05B 25/00, 27/22
U.S. Cl. 112—155 3 Claims

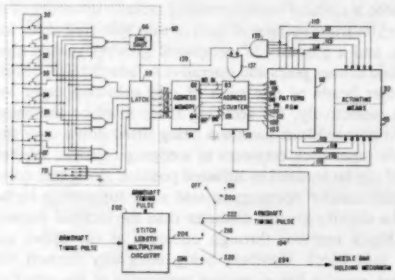


1. In a device for simultaneously performing a sewing operation upon a pair of oppositely disposed edges of a substantially rectangular drapery panel or similar article, said device including first and second elongated transport units, each unit including a pair of endless belts for progressively engaging areas of said panel bordering an edge thereof and moving said edge past a sewing station, each sewing station having a sewing machine thereat for applying stitching along a line parallel to a respective edge, the improvement comprising: a third endless belt positioned parallel to and traveling with one of said pair of endless belts at one sewing station, said third endless belt defining a gap with said one of said pair of belts through which a sewing machine needle may extend, said third belt preventing the flapping of material being sewn; whereby said sewing machine may perform its function in the absence of a pressure foot and feeding means, and the feeding of material past said sewing machine is governed solely by the speed of movement of said belts.

4,138,955
STITCH LENGTH CONTROL FOR ELECTRONIC SEWING MACHINE

Stephen A. Garron, Elizabeth, N.J., assignor to The Singer Company, New York, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,009
Int. Cl.[2] D05B 27/22, 3/02
U.S. Cl. 112—158 E 6 Claims



1. A sewing machine with needle reciprocating means, needle bight actuating means and feed actuating means for use in forming a succession of stitches individually placed in a selected pattern, said sewing machine including:

a. static memory means in which a multiplicity of separate digital code words for controlling the needle bight actuating means and feed actuating means are stored in a predetermined sequence;

b. pattern controlling switch means accessible to a sewing machine operator and effective to impress on said static memory a signal identifying as a starting word in a pattern a specific one of said multiplicity of separate digital code words which correspond to individually placed stitches;

c. means for producing timing pulses related to the operation of the needle reciprocating means;

d. stitch lengthening switch means;

e. an address counter coupled to the static memory and responsive to the timing pulses in one position of the switch means for successively addressing the digital code words in said memory in said predetermined sequence beginning with said starting word identified by the pattern controlling switch means and thereby causing the needle to assume a bight position and work to be fed according to the addressed code words such that stitches may be formed according to the selected pattern as the needle is moved into and out of the work by the reciprocating means;

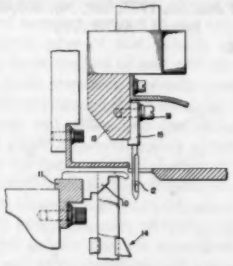
f. control circuitry connected to the address counter and responsive to said timing pulses in another position of the stitch lengthening switch means for limiting pulses controlling advances of the address counter to evenly spaced pulses separated by time intervals which are an integral multiple of the interval between the said timing pulses;

g. latching means operatively connected to said control circuitry and effective with the stitch lengthening control switch means in said another position to prevent needle reciprocation except in response to the said evenly spaced pulses which cause stitches to be formed in work being sewn.

4,138,956
TUFTING NEEDLE MODULAR UNIT

Ronald Parsons, Blackburn, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed May 19, 1978, Ser. No. 907,551
Claims priority, application United Kingdom, Jun. 30, 1977, 27478/77
Int. Cl.[2] D05B 55/02
U.S. Cl. 112—226 10 Claims



1. A tufting needle module comprising a body member having front and rear longitudinally extending surfaces, a plurality of similarly disposed elongated needles integrally formed with the body member and having point portions depending therefrom, said needles being equally spaced apart longitudinally along the body member, the spacing between adjacent needles defining the pitch of the needles of said module, protuberance means defining at least one male formation on one of the front and rear surfaces, recess means defining a like number of female formations on the other of said surfaces, said male formations being offset longitudinally from said female formations by a distance equal to an odd number multiple of one-half the pitch of the needles, said female formations being sized to cooperatively receive a male formation, and each of said male and female formations being at like equal spacing longitudinally along respective faces, whereby two

such modules may be cooperatively arranged in a two row assembly with the front surface of one in engagement with the rear surface of the other and needles in one row offset from those in the other row by one-half the pitch of the needles of each module.

4,138,957

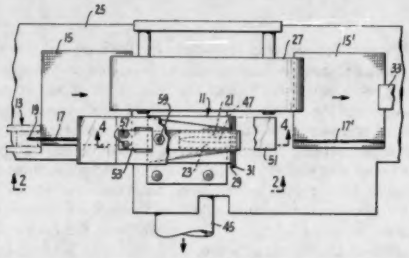
VACUUM THREAD CUTTER FOR USE IN AN AUTOMATED TEXTILE SEWING OPERATION

Hubert Blessing, Dallas, and Ted M. Ray, Plano, both of Tex., assignors to Levi Strauss & Company, San Francisco, Calif.

Filed Nov. 7, 1977, Ser. No. 849,076

Int. Cl.[2] D05B 65/00

U.S. Cl. 112—287 **8 Claims**



1. A thread cutter of a type employing a vacuum device for severing a trailing stitch chain from a cloth workpiece, comprising:

a block having a workpiece support surface and a vacuum throat opening therethrough at one of the block's corner edges,

a cutting mechanism adjacent the one corner edge of the block with a pair of thread cutting blades positioned to move substantially transversely with respect to the workpiece supporting surface,

means for guiding the workpiece along the workpiece supporting surface of the block in a direction thereacross over the throat opening therein and toward the corner edge and the cutting blades,

resilient means for curving the workpiece over the corner edge and the cutting blades to force the trailing stitch chain into engagement with the cutting blades as the workpiece is guided over the block by the guiding means.

4,138,958

THREAD TRIMMER DRIVING MECHANISM FOR SEWING MACHINES

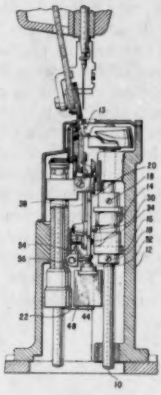
Reinhold Papajewski, Friedrichtal, Fed. Rep. of Germany, assignor to The Singer Company, New York, N.Y.

Filed Mar. 2, 1978, Ser. No. 882,698

Int. Cl.[2] D05B 65/00

U.S. Cl. 112—292 **3 Claims**

1. A driving mechanism for driving a thread trimmer for a sewing machine having a rotary hook, said driving mechanism comprisng a shaft rotatably mounted in said sewing machine in fixed relation with said hook, a first cam having a face containing a track and a second cam having a face containing a track rotatably fixed to and spaced apart on said shaft, a swivel lever pivotally mounted in spaced relation to said cams for pivoting from a first position to a second position, a driving member pivotally journalled to said swivel lever and to said thread trimmer, said swivel lever containing a bore for slidably receiving a movable follower pin and further containing a fixed follower pin rigidly attached thereto, a movable cam follower pin slidably received within said bore of said swivel lever and having means for engaging said first cam track, actuating means for selectively moving said movable cam follower pin for engaging said first cam track, said first cam track being shaped so as to move said movable follower pin and said swivel lever from the first position to the second position, whereby engagement of said movable follower pin with said first cam pivots said swivel lever from said first position to said second position and moves said driving member to actuate said thread trimmer and to engage said fixed follower pin with the track on



the face of said second cam, said second cam track being shaped so as to move said fixed follower pin and said swivel lever from the second position to the first position, and being disposed relative to the first cam track such that when the fixed pin engages the second track, the movable follower pin disengages from the first cam.

4,138,959

PRODUCTION OF COMPOSITE ARTICLES

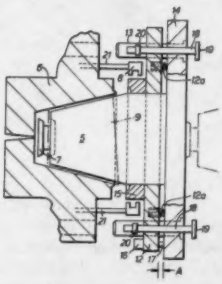
Kenneth F. Rumball, Great Bookham, England, assignor to Airfix Industries Limited, London, England

Filed Dec. 20, 1976, Ser. No. 752,614

Claims priority, application United Kingdom, Dec. 29, 1975, 53037/75

Int. Cl.[2] F01B 7/20

U.S. Cl. 113—1 G **5 Claims**



1. Apparatus for making a composite article from a planar blank of sheet material which blank includes an end panel and a side panel which are foldable relative to one another from the planar condition to the relative positions which they will occupy in the completed article, the apparatus comprising a cavity tool having an inner end at the closed end of said tool and an outer end face at the open end of said tool, a core tool having inner and outer ends and being movable relative to the cavity tool from an open condition to a closed condition in which it is received through said open end of the cavity tool in clamping relationship therewith, a blank side panel positioning member between the cavity tool and core tool outer end and

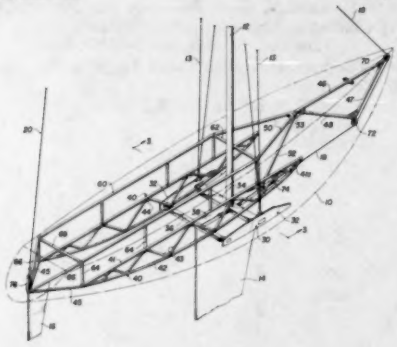
which is movable relative to the core tool and to the cavity tool between an open condition wherein said positioning member is spaced from the outer end face of said cavity tool, and a closed condition wherein the positioning member abuts the said outer end face of the cavity tool, blank locating means for locating a blank in generally planar condition between the cavity tool and positioning member with the end panel opposite the inner end of the core tool, means for moving the core tool and positioning member to a position in which the inner end of the core tool is within the cavity tool but is spaced from the closed end thereof out of clamping relationship therewith and in which the positioning member is in its closed condition in abutment with the outer end face of the cavity tool, said positioning member in its closed position being located so as to be engageable with an edge of a side panel of a blank remote from and directed away from the inner end of the core tool to maintain said side panel in proper attitude relative to the end panel before the blank is clamped between the core and cavity tools, and means for moving the core tool relative to the positioning member and to the cavity tool to complete the closing of those tools into clamping relationship with each other.

4,138,960

SAILBOAT CONSTRUCTION

Lars R. Bergström, Lands End, Longboat Key, Fla. 33548

Filed Apr. 22, 1977, Ser. No. 789,956
Int. Cl.[2] B63B *35/00*
U.S. Cl. 114—39 **29 Claims**



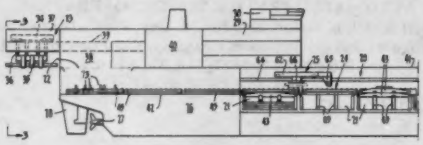
27. For use in a sailboat of the positive displacement type, a structural support frame system to be formed separately from and secured within the hull of an associated sailboat; the system comprising in combination, a first frame for supporting the mast of the boat and for absorbing loads acting through rigging shrouds of the sailboat about axes extending longitudinally of the boat, the first frame including a crosspiece to extend transversely of the boat and having opposite end portions to be connected to the rigging shrouds, a second support frame to extend longitudinally in the sailboat at locations fore and aft of the first frame for absorbing bending loads acting through the fore and aft mast stays about axes extending transversely of the sailboat, said second support frame including a front section to be located in the bow of the associated boat with the fore stay connected to said front section, said second frame including a rear section to be located generally at the stern of the boat for connecting the aft stays thereto.

4,138,961

VESSEL FOR CARRYING STEEL SLABS

Howard F. Roper, Upwey, Australia, assignor to The Broken Hill Proprietary Company Limited, Victoria, Australia

Filed Feb. 23, 1977, Ser. No. 771,325
Claims priority, application Australia, Feb. 23, 1976, PC4947
Int. Cl.[2] B63B *25/00*
U.S. Cl. 114—72 **14 Claims**



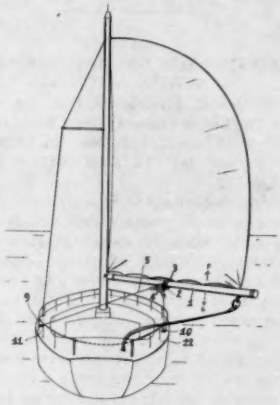
1. A vessel for carrying steel slabs or like cargoes, comprising a hull, an upper weather deck, at least one cargo hold, an opening predominantly through the weather deck and communicating with the interior of the hull of the vessel, loading means to transfer slabs to, and from, a wharf through said opening, at least one conveyor means extending longitudinally of the vessel and past the cargo hold, said loading means being adapted to deliver slabs to, and from, said conveyor means, and load transport crane means within said vessel for transferring said slabs between said conveyor means and the cargo hold, and wherein the loading means is at least one loading crane suspended from a cantilever supported structure extending beyond the stern of the vessel, and said loading crane is adapted to more lengthwise of the vessel between a position suspended over said wharf, to collect slabs, and a position over said opening whereby said slabs are delivered through said opening onto the stern ends of the conveyor means within the interior of said vessel.

4,138,962

DEVICE FOR CONTROLLING THE SWINGING OF THE BOOM OF A SAILBOAT

Ernest Waelder, Avenue Alfred de Vigny 20, Villa Reve d'Azur, 06300 Nice, France

Filed Aug. 11, 1977, Ser. No. 823,822
Claims priority, application France, Sep. 17, 1976, 76 28403
Int. Cl.[2] B63H *9/08*
U.S. Cl. 114—102 **3 Claims**



1. In a sailboat having a mast and a swingable boom extending rearwardly from the mast and a sail supported between the mast and the boom; the improvement comprising a device for controlling the swinging of the boom, comprising a line secured at its ends to opposite gunwales of the sailboat, a sheave

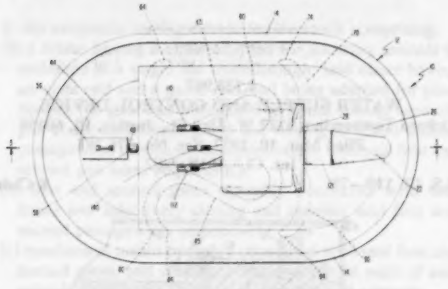
non-rotatably carried by the boom about one-third of the way from the mast to the rear end of the boom, said line passing in at least one dead turn about said non-rotatable sheave.

4,138,963

BOAT STEERING MECHANISM

William C. Thompson, P.O. Box 214, Goree, Tex. 76363

Filed Oct. 26, 1977, Ser. No. 845,621
Int. Cl.[2] B63H *11/10, 11/04*
U.S. Cl. 115—12 R **5 Claims**



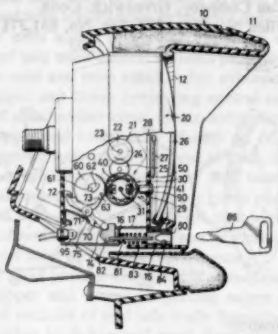
1. A boat comprising:
a hull including a seating compartment,
a channel extending in a fore-to-aft longitudinal direction along a bottom of said hull,
said channel at its fore end including a water inlet, and at its aft end a water outlet,
a motor driven propeller disposed within said channel for circulating water from said water inlet rearwardly through said water outlet to propel said hull in a forward direction,
front and rear port passages including water entrance openings communicating with said channel downstream of said propeller and water discharge openings directed laterally outwardly from the portside of said hull,
said water discharge opening of said front port passage being disposed forwardly of said water discharge opening of said rear port passage;
front and rear starboard passages including water entrance openings communicating with said channel downstream of said propeller and water discharge openings directed laterally outwardly from the starboardside of said hull,
said water discharge opening of said front starboard passage being disposed forwardly of said water discharge opening of said rear starboard passage;
a first pair of gates actuable in unison for opening said entrance openings of said front port passage and said rear starboard passage while simultaneously blocking water flow to said channel outlet, so that water is discharged through said discharge openings of said front port passage and said rear starboard passage to rotate said hull in a first direction, and
a second pair of gates actuable in unison for opening said entrance openings of said front starboard passage and said rear port passage while simultaneously blocking water flow to said channel outlet, so that water is discharged through said discharge openings of said front starboard passage and said rear port passage to rotate said hull in a second direction opposite said first direction.

4,138,964

AUTOMOBILE SERVICE AND INSPECTION TIME INDICATING DEVICE

Haruyasu Fujita, Tokyo, Japan, assignor to Honda GikenKogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1976, Ser. No. 754,073
Claims priority, application Japan, Jan. 5, 1976, 51-71[U]; Jan. 6, 1976, 51-311[U]
Int. Cl.[2] G01C *22/00*; G01D *21/00*
U.S. Cl. 116—62.4 **3 Claims**



1. A vehicle service and inspection time indicating device, comprising:
a meter case having a front surface;
an integrating odometer attached to said vehicle, including at least one rotatable wheel for registering the distance travelled by said vehicle, said odometer being enclosed within said meter case;
rotary members rotatably and operatively connected with said integrating odometer;
an indicating element provided on a peripheral surface of each of said rotary members, said indicating element being adapted to be visually perceived on said front surface of said meter case from a panel of said meter case, in an indicating state;
said indicating state beng maintained until said rotary members is stopped and reset;
an opening provided in said meter panel facing said rotary members, said opening being disposed in a path along which said indicating element is visually perceived in said indicating state;
a transparent body having a lustrous outer surface, said body being adapted to approach at one end thereof said indicating element, and to be present at the other end thereof in said opening, said body being fitted, inserted, and set in said opening;
said end of said body present in said opening having an outer surface which is outwardly curved and expanded to have a lens effect with said body;
resetting operation members provided so that their end surfaces do not project from said front surface of said meter case;
release and reset means provided for releasing and resetting said rotary members to a start position;
said resetting operation members being operably connected to said release and reset means and being adapted to activate said release and reset means for releasing and resetting said rotary members to said start position;
each said resetting operation member being loosely fitted in a hole provided in a lower portion of said meter case, and being resiliently supported in said hole so that its end surface may not project from said front surface of said meter case so as to be released and reset to said starting position by being pressed on said end surface thereof; and
a groove configured to be engaged by the pointed end of the vehicle's ignition key being made on said end surface of

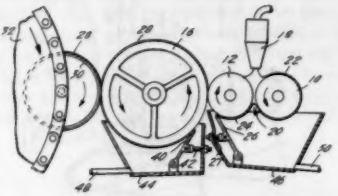
each said resetting operation member so that the rotary members may be released and reset to said start position when said ignition key is inserted into said groove.

4,138,965

APPARATUS FOR DELIVERING METERED AMOUNTS OF VARNISH TO THE SURFACE OF A CAN, OR THE LIKE

John J. Riese, Appleton, Wis.; Albert H. Burton, Ridgefield, Conn., and Leonard M. Moore, Goshen, N.Y., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 14, 1977, Ser. No. 851,371
Int. Cl.[2] B05C *1/02*
U.S. Cl. 118—203 **4 Claims**



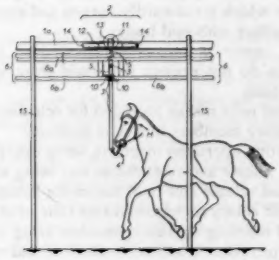
1. In combination:
first, second and third rolls having substantially parallel axes;
said first and second rolls being spaced apart by a predetermined space;
means for delivering varnish into said space;
said second roll having varnish wells distributed over the surface thereof;
said third roll having a resilient varnishing surface and being in contact with said second roll to receive varnish from said second roll; and
first and second doctor blades circumferentially positioned to remove varnish from said second and third rolls, respectively, ahead of the points of contact between said second and third rolls, said second blade removing substantially all varnish from said third roll; and
means for rolling cans against said third roll to receive a precise amount of varnish therefrom.

4,138,966

INSTALLATION FOR THE RACETRACK TRAINING OF RACEHORSES

Raymond Hesnault, Boitron, Orne, France, assignor to Etablissements Bouvry, Sees, Orne, France

Filed Apr. 11, 1977, Ser. No. 786,536
Claims priority, application France, Apr. 14, 1976, 76 11089
Int. Cl.[2] A01K *15/00*
U.S. Cl. 119—29 **4 Claims**



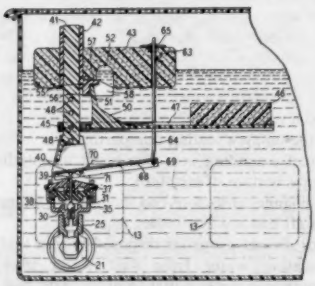
1. An installation for the racetrack training of racehorses comprising
an aerial guide;
a plurality of follower means connected together at regular intervals and each including a carriage traversing said aerial guide;
articulated elements connecting together said plurality of follower means;
drive means moving each of said follower means to follow a path of a racetrack at a variable speed which can correspond to a selected pace and including
two drive roller applying direct action on two sides of said articulated elements
a directing means borne by each of said follower means;
a harness connecting said directing means to a horse to be trained;
said directing means including a fork having branches which are connected by a tie to said harness
an articulation pivot for two of said articulated elements connected to one of said carriages traversing said aerial guide and to one of said directing means.

4,138,967

WATER SUPPLY AND CONTROL DEVICE

Richard Tamborrino, 8127 W. 83rd St., Justice, Ill. 60458

Filed Mar. 10, 1977, Ser. No. 776,291
Int. Cl.[2] A01K *7/02*
U.S. Cl. 119—78 **8 Claims**



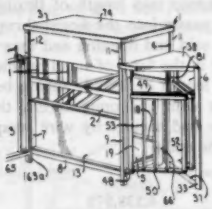
1. A water supply and control device for animals which includes,
a water reservoir,
a water supply pipe extending into said water reservoir,
a valve mounted on said supply pipe, said valve positioned within the water reservoir and controlling the flow of water through the water pipe,
an upper float assembly having a movable float element within the water reservoir mechanically linked to open and close said valve,
a lower float assembly having a float element connected to the end of an arm pivotally connected to a fixed location within said water reservoir,
a brace member having one end connected to the top side of the arm of said lower float assembly, the opposite end of said brace member engaging restraining means in the upper float assembly, and
means between the upper float assembly and the opposite end of the brace to allow said brace to remain in restraining engagement with the upper float assembly until the water within the reservoir falls to a predetermined level, said lower float assembly following the lowering of the water level until said predetermined level is attained whereby the brace is released from said upper float assembly allowing a fresh supply of water to enter the water reservoir until the upper float assembly shuts off the valve and the brace of the lower float assembly again engages the upper float assembly.

4,138,968

AUTOMATIC SORTING DEVICE FOR LIVESTOCK

Jerry L. Ostermann, R.R. 2, Sylvan Grove, Kans. 67481

Filed Apr. 20, 1977, Ser. No. 789,450
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—155 9 Claims



1. An automatic sorting device for livestock comprising:

(a) a frame having a chute adapted for allowing animals to ambulate in a single file therethrough; said chute having an open end and a gated end, and being adapted for positioning the gate end interjacent first and second separate pen areas; said frame gated end having first and second passageways therein for communication with said first and second pen areas respectively;

(b) first and second gates operably connected with said frame and selectively closing and opening said first and second passageways respectively;

(c) mechanical means operably connected with said first and second gates, and sensitive to the weight of each of said animals ambulating through said chute; and wherein

(d) said mechanical means includes a securing member associated with said gates and adapted to secure one of said gates while opening the other of said gates in response to exceeding a predetermined weight of animal in said chute;

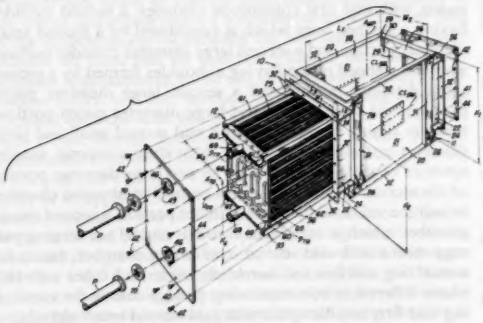
(e) whereby said first gate is openable for guiding underweight livestock into said first pen area, and said second gate is openable for guiding overweight livestock into said second pen area.

4,138,969

HEAT EXCHANGER AND ECONOMIZER

Garris A. Thompson, Orangeburg, S.C., and John H. Merritt, Jr., Atlanta, Ga., assignors to Applied Engineering Co., Orangeburg, S.C.

Filed Jul. 8, 1977, Ser. No. 813,805
Int. Cl.[2] F22D *1/08*
U.S. Cl. 122—421 7 Claims



1. A heat exchanger for placing a main fluid in a heat exchange relationship with a heat exchange fluid comprising:

a housing defining a main fluid passage along a common passage axis therethrough through which the main fluid flows and a tube bundle access opening to said main fluid passage, said housing including

a pair of spaced apart, generally parallel side walls, each of said side walls comprising a generally rectilinear main central section and a pair of generally rectilinear end tube subchamber extensions integral with opposite ends of said main central section and centered on the longitudinal axis of said central section so that said end tube subchamber extensions on opposed side walls are opposed to each other and said main central sections on opposed side walls are opposed to each other, each of said end tube subchamber extensions defining upper and lower ends and a projecting extension edge thereon, each of said main central sections projecting above and below said end tube subchamber extensions and defining upper and lower projecting central edges thereon;

a pair of subchamber cross plates connecting the respective upper and lower ends of each set of said end tube subchamber extensions opposed to each other to define an end tube subchamber, said end tube subchamber extensions and said subchamber cross plates defining a pair of said tube bundle access openings on opposite sides of said housing at the projecting extension edges of said end tube subchamber extensions;

a pair of fluid passage cross plates connecting the respective upper and lower projecting edges of said main central sections of said side walls laterally aligned with each other to define said main fluid passage with said end tube subchambers opening into said main fluid passage on opposite sides thereof and with said end tube subchambers centered on a common access axis generally normal to and intersecting said common fluid passage axis; and

a pair of spaced apart, generally parallel slide rails extending between said subchamber cross plates on opposite ends of said housing connecting the lower edges of said end tube subchamber extensions, one of said slide rails carried by each of said main central sections of said side walls;

a tube bundle unit removably received in said housing through said tube bundle access opening and supported by said housing in said main fluid passage, said tube bundle unit including

a tube bundle frame comprising a pair of spaced aprt, generally parallel tube sheets oriented generally normal to a longitudinal tube bundle axis and a plurality of side rails connecting said tube sheets, said side rails oriented generally parallel to the tube bundle axis so that when said tube bundle frame is slidably positioned in said housing with said slide rails on said housing carrying said side rails on said tube bundle unit, said tube sheets are in alignment with said fluid passage cross plates to separate said end tube subchambers from said main fluid passage; and

a tube bundle carried by said tube sheets, said tube bundle including a plurality of generally straight heat exchange tubes extending between said tube sheets within said tube bundle frame, a plurality of tube ends serially connecting said heat exchange tubes outboard of said tube sheets, an inlet supply head connected to said heat exchange tubes outboard of said tube sheets, to introduce the heat transfer fluid into said heat exchange tubes, an outlet header connected to said heat exchange tubes outboard of said tube sheets to remove heat transfer fluid from said heat exchange tubes, an outlet supply pipe to said inlet header, and an outlet supply pipe to said outlet header; and

cover means for selectively closing said tube bundle access opening to prevent the flow of the main fluid out of said main fluid passage so that said tube bundle unit places the heat exchange fluid therein in a heat exchange relationship with the main fluid in said main fluid passage, said cover means including a pair of cover panels removably attached to said subchamber cross plate and said end tube

subchamber extensions to selectively close said tube bundle access openings, said cover panels defining pipe openings therethrough in registration with inlet and outlet supply pipes on said headers through which said supply pipes extend to externally introduce heat transfer fluid in and remove heat transfer fluid from said headers.

4,138,970

APPARATUS FOR PRODUCING AN AIR AND LIQUID VAPOR MIXTURE

Fred L. Harmon, 7808 Jefferson, Kansas City, Mo. 64114

Filed Oct. 15, 1976, Ser. No. 732,590
Int. Cl.[2] F02D *19/00*
U.S. Cl. 123—25 R **2 Claims**

1. An apparatus for producing an air and liquid vapor mixture for connection into a fuel inlet stream of an internal combustion engine comprising:

a rigid wall container having an open top through which liquid to be vaporized can be supplied to the container;

a closure member removably covering the open top of said container and providing a vacuum tight seal therefor;

a rigid tube carried by said closure member in a position operable when said closure member is in covering relation with said container to provide a fixed imperforate elongated passageway for the flow of atmospheric air from an air inlet position at one end of said tube to an outlet position adjacent the bottom of the container at the other end thereof;

the upper end portion of said rigid tube extending through said closure member and being peripherally fixedly sealed thereto;

said fixed imperforate passageway being of generally constant cross-sectional configuration throughout and devoid of restrictions therein from said one end to said other end;

a length of flexible tubing having one end thereof fixed to the other end of said rigid tube in air flow communicating relation;

said length of flexible tubing extending from the other end of said rigid tube in a loop disposed along the container bottom;

a rigid element inserted in the opposite end of said flexible tubing;

said length of flexible tubing between the ends thereof having a multiplicity of needle punctures extending through the wall thereof;

a vacuum line exterior of said container and said closure member having one end adapted to be connected to a vacuum source provided by the fuel inlet stream of the engine; and

means carried by said closure member sealingly communicating the other end of said vacuum line to the interior of said container when said closure member is in covering relation therewith at a position adjacent the closure member within the space above the free surface of a liquid within said container whereby the vacuum communicated with said space will cause air to be drawn through said air inlet along said fixed passageway to the outlet end of said rigid tube and into said length of flexible tubing, from which the air passes into the liquid through said needle punctures and said end opening and then rises upwardly into said space in the form of small bubbles,

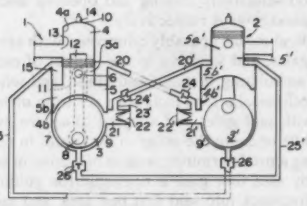
the ends of said length of flexible tubing being fixedly secured together with said opposite end thereof disposed above said one end thereof by wire wrapped about the periphery of the ends.

4,138,971

CRANKCHAMBER PRECOMPRESSION TYPE TWO-CYCLE INTERNAL COMBUSTION ENGINES

Tetsuzo Fujikawa, Kobe, and Toshiyuki Takada, Miki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

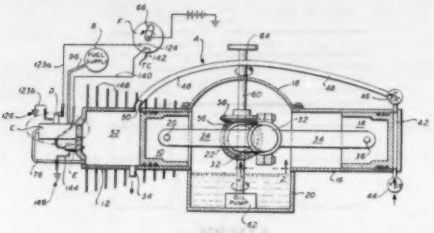
Filed Oct. 27, 1976, Ser. No. 736,141
Claims priority, application Japan, Oct. 31, 1975, 50-131823
Int. Cl.[2] F02B *75/20*
U.S. Cl. 123—59 BS **1 Claim**

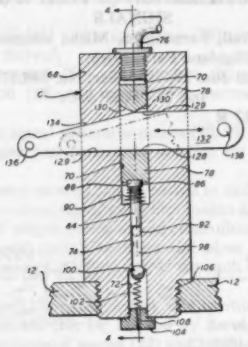


1. Two cycle internal combustion engine comprising a first cylinder having a stepped bore which is constituted by a first small diameter portion and a first large diameter cylinder portion, a first stepped piston having a shoulder formed by a first small diameter portion and a first large diameter piston portion, said first small and large diameter piston portions being in sliding engagement with said first small and large diameter cylinder portions, respectively, providing a first annular space of variable volume in said first large diameter portion of the first cylinder and also a first combustion chamber in said first small diameter cylinder portion, a first crankchamber which is connected through first scavenging passage means with said first combustion chamber, a second cylinder having a stepped bore which is constituted by a second small diameter portion and a second large diameter cylinder portion, a second stepped piston having a shoulder formed by a second small diameter portion and a second large diameter piston portion, said second small and large diameter piston portions being in sliding engagement with said second small and large diameter portions, respectively, providing a second annular space of variable volume in said second large diameter portion of the second cylinder and also a second combustion chamber in said second small diameter cylinder portion, a second crankchamber which is connected through second scavenging passage means with said second combustion chamber, means for connecting said first and second pistons to each other with 180° phase difference, communicating passage means for connecting said first annular space with said second crank-chamber at the bottom thereof, and for connecting said second annular space with said first crank-chamber at the bottom thereof, intake passage means, said first and second annular spaces being connected with said intake passage means, and said communicating passage means being provided with check

valve means for allowing gas flow only toward the crankchambers.

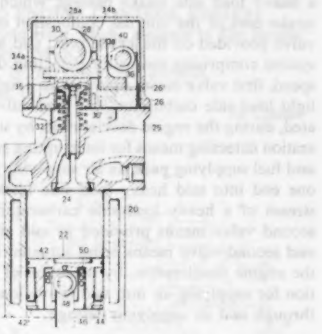
4,138,972
FUEL INJECTION MEANS FOR INTERNAL COMBUSTION ENGINES
Ora E. Wilson, 3906 Holly Dr., West, Holiday, Fla. 33589
Filed Jun. 6, 1977, Ser. No. 803,598
Int. Cl.[2] F02B *33/10*; F02M *39/00, 49/02*
U.S. Cl. 123—71 R **3 Claims**





1. An internal combustion engine comprising a power cylinder, a power piston reciprocable in said cylinder, an air injection cylinder, an air injection piston reciprocable in the latter cylinder, an air duct interconnecting the two said cylinders, a crank shaft having crank means connected to both said pistons constraining said air injection piston to pursue an air compression stroke and an air intake stroke approximately simultaneously with and respectively with reference to a combustion stroke and a compression stroke of said power piston; and fuel injection means and firing means coacting with said power cylinder and timed to operate sequentially approximately at the end of said power piston's compression stroke; said air duct being so interconnected between the two said cylinders as to transfer air from said air injection cylinder into said power cylinder approximately at the end of said power piston's combustion stroke, said fuel injection means comprising a housing disposed upon the outer end of said power cylinder and formed with a bore therein opening into the latter cylinder, plunger means accurately fitted slidably in said bore, a solenoid having a solenoid rod coacting with said plunger means to hold the latter in an upper, non-fuel-injecting position, a duct interconnecting the upper end of said bore and a combustion chamber at the outer end of said power cylinder, spring means coacting with said plunger means to bias the latter toward its said upper position, a fuel controlling check valve, located in said bore at a distance below said plunger means to define therebetween a pump chamber, duct means opening into said pump chamber to transport fuel into the latter chamber, a manually operable slide element coacting with said plunger means to adjustably limit the sliding of said plunger means, a rotary switch coacting with said crankshaft and having a contact electrically connected to said solenoid, and a rotary switching element turning in one-to-one relationship to the turning of said crankshaft, said contact being so positioned in said rotary switch as to cause energizing of said solenoid to withdraw the latter's said rod from its coaction with said plunger means concurrently with the approach of said power piston to its outermost position in the power cylinder, thereby permitting said plunger means to force a measured charge of fuel from said pump chamber, past said fuel controlling check valve and into said combustion chamber.

4,138,973
PISTON-TYPE INTERNAL COMBUSTION ENGINE
David Luria, University St. 81B, Tel Aviv, Israel
Division of Ser. No. 585,652, Jun. 10, 1975, Pat. No. 4,033,304.
This application May 10, 1977, Ser. No. 795,433
Claims priority, application Israel, Jun. 14, 1974, 45039
Int. Cl.[2] F02B *75/04*; F02D *13/00*
U.S. Cl. 123—78 B **4 Claims**



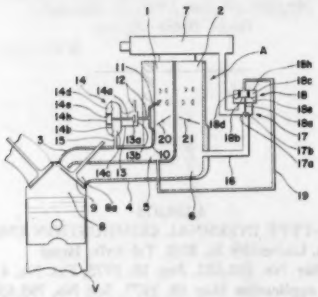
1. An internal combustion engine including a cylinder; a piston movable therein; means including an intake valve for effecting the induction of a charge of fuel air mixture into the cylinder; a control member movable to control the engine output; a variable valve timing device controlling the timing of the intake valve; a coupling between said movable control member and the variable timing device, said coupling varying the timing of the intake valve in response to the movement of the control member and thereby controlling the quantity of the fuel air mixture charge inducted into the cylinder; said piston including a floating crown such that the lowering of the gas pressure acting thereon upon an increase in the delay of closing the intake-valve, permits the crown, by virtue of the inertia force acting thereon, to move further inwardly into the cylinder at the end of the compression stroke than when the said delay is decreased, thereby causing the engine operation to approximate a substantially constant compression ratio operation notwithstanding variations in said valve closing delay and variations in the engine output; said piston further including a skirt coupled to the piston pin; and a spring connected at one end to the piston pin and at the opposite end to the piston crown, said spring acting with said inertia force to move the crown further inwardly into the cylinder at the end of the compression stroke.

4,138,974

AIR-FUEL MIXTURE INTAKE SYSTEM

Yasunori Takemoto; Tsutomu Matsuoka, both of Hiroshima, and Tadataka Nakasumi, Kure, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 12, 1977, Ser. No. 841,432
Claims priority, application Japan, Oct. 13, 1976, 51-138195[U]
Int. Cl.[2] F02M *23/04*; F02T *9/00*; F02M *23/00*
U.S. Cl. 123—97 B 9 Claims



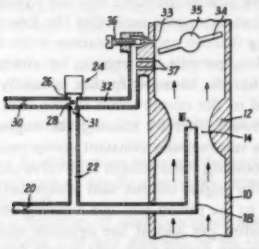
1. An air-fuel mixture intake system for use in an internal combustion engine having a light load side intake passage and a heavy load side intake passage which are connected to a intake port of the internal combustion engine, and an intake valve provided on the intake port, said airfuel mixture intake system comprising means for detecting decelerated of engine speed, first valve means provided in a fuel supplying path of a light load side carburetor, said first valve means being actuated, during the engine deceleration, by signal from said deceleration detecting means for interrupting supply of fuel through said fuel supplying path, an air supplying passage opened at its one end into said heavy load side intake passage at downstream of a heavy load side carburetor throttle valve, and second valve means provided in said air supplying passage, said second valve means being actuated to be opened, during the engine deceleration, by detection of the engine deceleration for supplying air into said heavy load side intake passage through said air supplying passage.

4,138,975

CONTROL DEVICE FOR CARBURETOR

Gilbert Hamelin, Marly La Ville, and Louis Monpetit, Foncquevillers, both of France, assignors to Societe Anonyme DBA, Paris, France

Filed Apr. 2, 1976, Ser. No. 673,184
Claims priority, application France, Jan. 16, 1976, 76 01077
Int. Cl.[2] F02D *11/10*; F02M *39/00*
U.S. Cl. 123—102 20 Claims



1. In a carburetor comprising an idle and low speed circuit a control valve mounted in said circuit for controlling admission of fuel-air mixture in said circuit,

first means for generating a first signal the amplitude of which is representative of the amplitude of the variations between the durations of two engine cycles, and

second means for generating a control signal for controlling said valve to modulate admission of said fuel-air mixture,

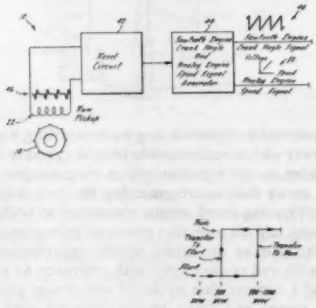
said second means being responsive to said first signal for generating said control signal whose duration decreases as a function of the level of said first signal.

4,138,976

ENGINE TIMING SYSTEM WITH AUTOMATIC SELECTIVE UTILIZATION OF FIRST AND SECOND SIGNALS

Frederick W. Crall, Farmington, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 19, 1975, Ser. No. 588,278
Int. Cl.[2] F02P *5/04*
U.S. Cl. 123—117 R 13 Claims



1. In an ignition system for an internal combustion engine, the combination comprising:

(a) first means driven by the engine for periodically generating a first signal;

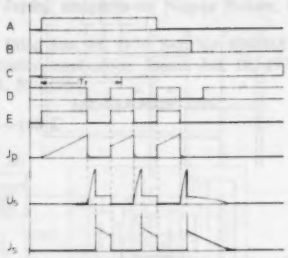
(b) second means driven by the engine for periodically generating a second signal;

(c) means for selectively controlling the utilization of said first and second means in controlling ignition firing comprising, means for sensing the frequency of said first signal, means for causing said second means to control ignition firing so long as the frequency of said first signal is below a predetermined value which corresponds to an engine speed greater than engine cranking speed, means for transferring control of ignition firing from said second means to said first means when the frequency of said first signal attains said predetermined value, and means for transferring control of ignition firing back from said first means to said second means when the frequency of said first signal falls below a value which is less than said predetermined value and corresponds to an engine speed less than engine idle speed.

4,138,977
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Günter Gräther, Pinache, and Friedrich Rabus, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1977, Ser. No. 798,331
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623865
Int. Cl.² F02P *1/00, 5/04*
U.S. Cl. 123—117 R **12 Claims**



1. Extended spark ignition system for an internal combustion engine having

an ignition coil (**18**) and a spark gap (**20**) connected to the secondary thereof;

a controlled switch (**16**) connected to the primary of the ignition coil (**18**) and controlling current flow therethrough;

ignition event signal generator means (**10, 11, 12**) connected to the engine and generating a pulse for each ignition event;

a pulse generator means (**22**) connected to and controlled by said ignition event signal generator means and providing a sequence of output pulses to said controlled switch (**16**) to command said switch to open and close a plurality of times to generate multiple sparks for each ignition event, and

a timing means (**23**) controlled by said ignition event signal generator means (**10, 11, 12**) and by the signal (D) from said pulse generator means (**22**) and additionally controlling the controlled switch by providing at least one command pulse to said controlled switch to open, and cause an ignition event, at a time controlled by the timing means, upon failure of operation of said pulse generator means.

4,138,978
TWO-OPEN-POSITION CHOKE VALVE CONTROL SYSTEM

Toshio Morikawa, Toyota, and Keiichi Okabayashi, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 22, 1976, Ser. No. 734,868
Claims priority, application Japan, Jul. 20, 1976, 51-85562
Int. Cl.² F02M *1/10*
U.S. Cl. 123—119 F **3 Claims**

1. A two-open-position choke valve control system comprising:

a first diaphragm linked with a choke valve shaft;

a second diaphragm;

a housing in which said first and second diaphragms are arranged;

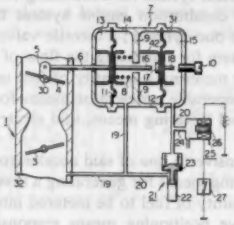
a prop rod arranged between said first and second diaphragms, the length of said rod being shorter than the distance between said first and second diaphragms during their release conditions;

a stopper means for preventing said second diaphragm from moving toward said first diaphragm;

a first chamber formed between said first and second diaphragms and communicating with an intake pipe downstream of a carburetor throttle valve; and,

a second chamber formed outside of said second diaphragm and communicating with said intake pipe through a device for detecting the driving conditions of a vehicle, said device comprising:

a thermostatic valve mounted on a communicating pipe connecting said second chamber with said intake pipe for detecting the temperature of engine coolant and opening



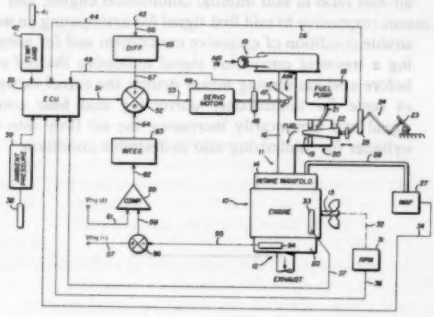
said communicating pipe when said coolant temperature is above a predetermined value, and

a solenoid valve mounted on a relief pipe connected to said communicating pipe and coupled to a vehicle speed detector for blocking said communicating pipe from communicating with the atmosphere when the vehicle speed is above a predetermined value.

4,138,979
FUEL DEMAND ENGINE CONTROL SYSTEM

Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 29, 1977, Ser. No. 837,658
Int. Cl.² F02D *35/00*
U.S. Cl. 123—119 EC **33 Claims**



1. A closed loop system for controlling the air-fuel mixture in an internal combustion engine comprising:

accelerator means for supplying a quantity of fuel to said internal combustion engine;

means responsive to said accelerator means for generating a first signal indicative of said quantity of supplied fuel;

means for controlling the flow of air into said internal combustion engine;

means responsive to said air flow control means for generating a second signal indicative of the actual air flow into said engine;

control signal-computing means responsive to at least said first and second signals for generating a basic control signal for regulating said air flow control means, said basic control signal commanding a desired air flow as a function of the quantity of fuel supplied to the engine;

means responsive to the actual air-fuel mixture existing in said engine for generating a feed-back signal indicative thereof; and

means responsive to said feed-back signal for correcting said basic control signal, said air flow control means being responsive to said corrected control signal for selectively increasing and decreasing the air flow into said engine to maintain a desired optimal air-fuel ratio under substantially all engine operating conditions.

15. An electrical system for controlling the air-fuel mixture in an internal combustion engine system having an intake system, at least one cylinder, a throttle valve disposed within said intake system for regulating the flow of air to said cylinder, means for metering a quantity of fuel into said cylinder, and manually operable accelerator means for positively controlling said fuel metering means, said electrical system comprising:

means responsive to one of said accelerator means and said fuel metering means for generating a first signal indicative of the quantity of fuel to be metered into said cylinder;

throttle valve positioning means responsive to a control signal for regulating the position of said throttle valve to selectively vary the flow of air into said cylinder;

means responsive to one of said throttle valve and said throttle valve positioning means for generating a second signal indicative of the actual air flow into said cylinder;

electronic control unit means responsive to at least said first and second signals for generating a base control signal commanding a predetermined desired air flow as a function of metered fuel and the like for controlling said throttle valve positioning means;

gas sensing means disposed in said engine for generating a feedback signal indicative of the actual air-fuel mixture existing therein;

loop-closing means responsive to said feed-back signal for correcting said base control signal such that said throttle valve positioning means is responsive to said corrected control signal for more accurately maintaining a desired air-fuel ratio in said internal combustion engine; and

means responsive to said first signal for anticipating an undesirable condition of excessive enrichment and for generating a transient correction signal indicative thereof even before said gas sensing means detects the actual existence of same for immediately correcting said base control signal and temporarily increasing the air flow into said cylinder for minimizing said undesirable condition.

4,138,980

SYSTEM FOR IMPROVING COMBUSTION IN AN INTERNAL COMBUSTION ENGINE

Michael A. V. Ward, 20 Marret Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 496,393, Aug. 12, 1974, Pat. No. 3,934,566, and Ser. No. 622,165, Oct. 14, 1977, abandoned. This application Nov. 21, 1977, Ser. No. 853,436

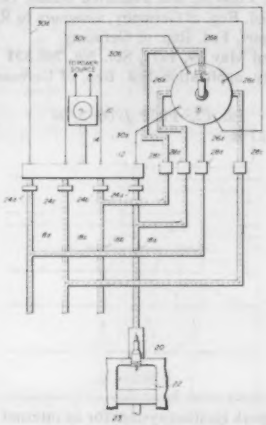
Int. Cl.[2] F02M *7/00;* **F02B** *33/00*

U.S. Cl. 123—119 E **22 Claims**

1. A system for use with an internal combustion engine having a combustion chamber of predetermined shape, means for producing a combustible mixture therein, and means for igniting said mixture, the system comprising means for generating, and for conducting to said combustion chamber, electromagnetic energy at an operating frequency, f_o, which

a. is of the order of the plasma frequency of a species of charged particles of said mixture, and

b. excites at least one resonant mode of said combustion chamber continuously during the conduction of said energy to said combustion chamber;



and at a power level sufficient to enhance combustion reactions.

4,138,981

FUEL INJECTION PUMPING APPARATUS FOR INTERNAL COMBUSTION ENGINES

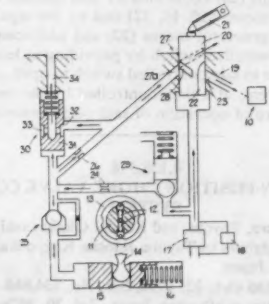
Alan C. Green, Woodley Green, England, assignor to Lucas Industries Ltd., Birmingham, England

Filed Jun. 21, 1977, Ser. No. 808,670

Claims priority, application United Kingdom, Jun. 22, 1976, 25821/76

Int. Cl.[2] F02M *39/02;* **F04B** *3/00*

U.S. Cl. 123—139 AQ **9 Claims**



1. A fuel injection pumping apparatus for supplying fuel to internal combustion engines comprising an injection pump for delivering fuel in timed relationship to an associated engine, a feed pump for supplying fuel to the injection pump during the filling periods thereof, throttle means for adjusting the amount of fuel supplied by the feed pump to the injection pump and fluid pressure operable means for adjusting a component of the injection pump to vary the timing of delivery of fuel to the associated engine, valve means operable to provide a fluid pressure which increases as the speed of operation of the apparatus increases, a first fixed orifice through which said fluid pressure is applied to said fluid pressure operable means, a second fixed orifice and through which fluid from the down stream side of said first fixed orifice can flow to a drain, a variable orifice connected in series with said second orifice and operable to vary the speed responsive pressure applied to the

fluid pressure operable means, the size of said variable orifice being determined by the setting of said throttle means, and a pressure responsive valve operable to provide a flow path in parallel with one of said orifices, said valve being responsive to a fluid pressure within the system.

4,138,982

ELECTRONIC IGNITION TIMING ADJUSTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

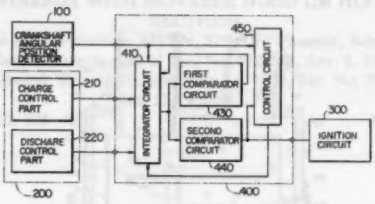
Tadashi Hattori; Minoru Nishida, and Yoshiki Ueno, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 15, 1976, Ser. No. 696,364

Claims priority, application Japan, Jul. 10, 1975, 50-84963; Jul. 10, 1975, 50-84964

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 E **9 Claims**



1. An electronic ignition timing adjusting system for an internal combustion engine which has an ignition system wherein the timing of ignition by said ignition system is electronically adjusted, said adjusting system comprising:

crankshaft angular position detector means for detecting first and second different rotational angular positions of a crankshaft of said engine to generate corresponding first and second detection signals;

charge storage means including at least one capacitor;

a charge and a discharge control circuit connected to said charge storage means for providing a charging current and discharge current to said charge storage means;

switching means connected to said crankshaft angular position detector means, said charge storage means and said charge and discharge control circuit for supplying a charging current from said charge and discharge control circuit to said charge storage means in response to said first detection signal and for supplying a discharge current from said charge storage means to said charge and discharge control circuit in response to said second detection signal;

means connected to said charge storage means for reducing the charge and discharge currents of said charge storage means when the magnitude of the charge on said charge storage means exceeds a predetermined value; and

ignition signal generating means connected to said charge storage means for detecting the completion of the discharging of said charge storage means in accordance with said discharge current to generate an ignition signal.

4,138,983

ENGINE IGNITION SYSTEM WITH ELECTROMAGNET CONTROL OF ENCLOSED DISTRIBUTOR GAPS

Helmut Espenschied, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

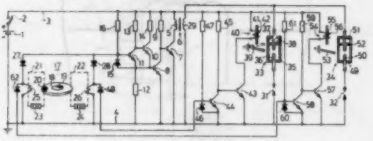
Filed Oct. 26, 1977, Ser. No. 845,795

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649844

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 DK **9 Claims**

1. An ignition system for an internal combustion engine, said ignition system having a plurality of high-voltage switches contained in hollow gas-filled envelopes of insulating material for switching spark plugs, said switches comprising in each gas-filled envelope a cathode electrode and an anode electrode projecting into the interior of said envelope and means adjacently outside the envelope including a nearby movable control electrode at a predetermined potential for promoting the allocation of a high-voltage pulse to the cathode and anode of the neighboring envelope in one but not all of the positions to which said electrode is movable, each said cathode having in the respective envelope a lateral extension reaching at least approximately to the wall of said envelope, said control elec-



trode being arranged to be movable outside said envelope so as to move past a position at least partly consituting a further extension of said lateral extension of said cathode in order to promote a discharge of said high-voltage pulse in said envelope, said system having the improvement which consists in that: at least one electromagnet is provided for controlling said movable electrodes, and said at least one electromagnet, when selectively energized, moves at least one respective control electrode (**39, 53**) alongside the lateral extension (**38,52**) of the cathode of a corresponding high-voltage switch (**33,34**).

4,138,984

LIGHT ALLOY PISTON FOR DIESEL ENGINES

Werner Steidle, Bad Friedrichshall II; Wilfried Sander, and Ernst Deubelbeiss, both of Neckarsulm, all of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Feb. 13, 1976, Ser. No. 658,006

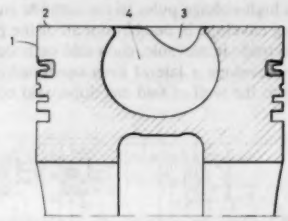
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1975, 2507899

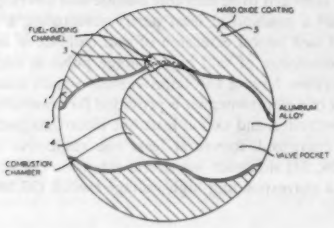
Int. Cl.² F02F *3/12*

U.S. Cl. 123—193 P **6 Claims**

1. Light alloy piston for diesel engines comprising a piston head covered with a hard eloxal coating and having an interior combustion chamber therein and a piston pin received in the

piston head, said piston head being free of the hard eloxal coating in those regions which are adjacent to the edge portion





of the interior combustion chamber lying in the plane of the piston pin.

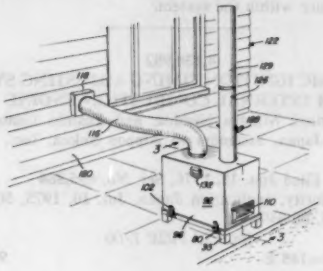
4,138,985

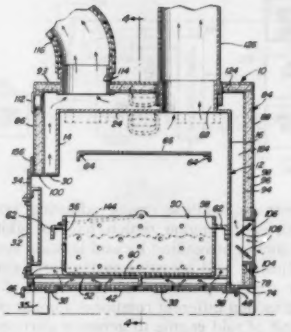
PORTABLE HEATING AND COOKING STOVE

William R. Marley, 147 Filmore, Pocatello, Id. 83201

Filed Aug. 10, 1977, Ser. No. 823,464
Int. Cl.[2] F24C *1/14*; F24B *3/00*
U.S. Cl. 126—6 **12 Claims**

1. A portable heating and cooking stove, said stove including a fire box having upstanding peripheral walls and bottom and top wall means, said fire box including lower draft air inlet means and upper flue gas outlet means, the lower portion of said fire box including horizontally outwardly projecting seat means extending peripherally about at least all but one peripheral wall portion of said fire box, a downwardly opening hollow plenum box including upstanding peripheral walls and top wall means, said plenum box being removably downwardly telescoped over said fire box with lower portions of peripheral wall means thereof seated against said seat means, and the corresponding peripheral walls and wall means and top walls of said fire box and plenum box in spaced relation defining a heating chamber therebetween, said flue gas outlet means opening upwardly through said top wall means of said fire box and including an outlet pipe portion, said top wall means of said plenum box including an opening therethrough into which said outlet pipe portion projects, said one peripheral wall portion including a horizontally outwardly projecting hollow neck opening through the lower portion thereof defining a fuel inlet passage, the peripheral wall portion of said plenum box parallel and adjacent said one peripheral wall portion including a downwardly opening notch formed in the lower portion thereof in which said neck is snugly received, intake means for admitting air to be heated into a lower portion of said heating





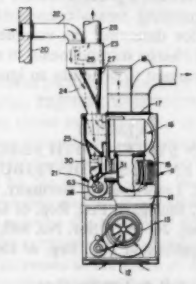
chamber and heated air discharge means for discharging heated air from an upper portion of said heating chamber.

4,138,986

HIGH EFFICIENCY FURNACE WITH LOW POLLUTING EMISSIONS

L. Paul Combs, Woodland Hills; Allan S. Okuda, Canoga Park, and Larry H. Russell, Agoura, all of Calif., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Mar. 14, 1977, Ser. No. 777,230
Int. Cl.[2] F24H *3/06*
U.S. Cl. 126—116 R **36 Claims**



1. A domestic furnace for heating fluid that is circulated through a volume being heated comprising an oil burner, a massive metal uninsulated firebox for combustion products of the oil burner, a heat exchanger having an interior in fluid flow relationship with fluid heated in the firebox and an exterior

surface for heating the circulated fluid, said firebox having an exterior surface including heat exchanger fins in heat exchange relationship with the circulated fluid so that the products of combustion in the firebox are cooled by a heat exchange between the products of combustion and the circulated fluid passing the exterior surface, said fins being arranged so that there is a substantially uniform temperature on the interior wall of the firebox to prevent hot spots from forming on the wall and thereby reduce substantially the formation of NO_x, a flue in fluid flow relationship with the heat exchanger interior for venting exhaust gases from the firebox and the interior of the heat exchanger to the exterior of the heated volume, a pressure controlled damper leading to said flue, a conduit extending from the exterior of the heated volume to (a) the burner for supplying exterior air to the burner, and (b) the damper for supplying exterior air to the flue.

4,138,987

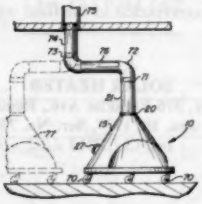
FIREBOX WITH MOVABLE HOOD OR HOOD SECTIONS

Arthur R. A. Fromman, 4517 N. 17th Dr., Phoenix, Ariz. 85015

Continuation-in-part of Ser. No. 672,663, Apr. 1, 1976, abandoned. This application May 11, 1977, Ser. No. 795,759

Int. Cl.[2] F24B *1/18*

U.S. Cl. 126—120 **4 Claims**



1. A firebox movably supportable on a platform comprising in combination:

a hood means extending from a platform-engaging end toward a flue-engaging end,

said hood means comprising a conical configuration having a fireplace-type opening,

caster means attached to said platform-engaging end for engaging and supporting the firebox on a platform for movement thereover,

substantially rigid flue means for connecting said flue-engaging end to a fixed chimney structure,

a first swivel means connecting said flue means to said chimney, and

a second swivel means connecting said hood means to said flue means,

whereby said hood means may be movable in a first arcuate path relative to the platform and said hood means and said flue means movably in a second arcuate path relative to the chimney independently of the hood movement in the first arcuate path without deforming said flue means.

4,138,988

OVEN DOOR HINGE

James E. Hurley, Chattanooga, Tenn., assignor to McGraw-Edison Company, Elgin, Ill.

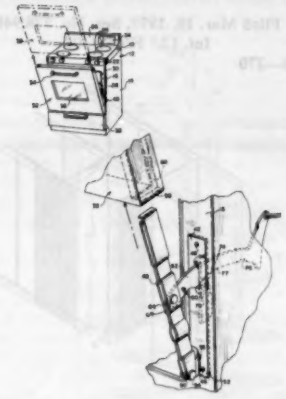
Filed Nov. 21, 1977, Ser. No. 853,034

Int. Cl.[2] F23M *7/00*

U.S. Cl. 126—194 **8 Claims**

1. A hinge assembly for removably mounting an oven door to the front wall of an oven cabinet for movement between open and closed positions with respect to an oven cavity defined therein, the front wall having an aperture defined therein adjacent said oven cavity, said hinge assembly including in combination:

a hinge plate having an aperture therethrough, attached to said front wall in overlying relation with respect to said aperture in said front wall, a hinge arm for removably receiving said oven door, said hinge arm being coupled to said plate for pivotal movement with respect thereto, a support arm joined to said hinge arm and passing through said hinge plate and said aperture in said front wall into said oven cabinet alongside said oven cavity, said support arm being movable to position said hinge arm and oven door to various positions with respect to said front wall of said oven, and biasing means coupled to said support arm



urging the latter into said oven cabinet and said hinge arm toward said front wall, and permanently affixed stop means on said support arm for engagement with said hinge plate upon removal of said oven door from said hinge arm and movement of the latter toward said front wall for preventing forcible engagement of said hinge arm with said front wall, said stop means being spaced from said hinge plate when said oven door is received on said hinge arm and the door is moved from a fully open to a closed position with respect to said oven cavity.

4,138,989

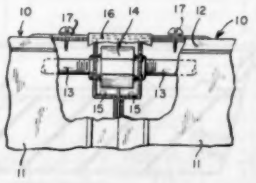
FLAT PLATE SOLAR COLLECTOR SYSTEM

George H. Doyle, 824 Camino de Paz, El Paso, Tex. 79922, and John R. Johnston, Star Route, Box 1262, Corrales, N. Mex. 87048

Filed Feb. 10, 1977, Ser. No. 767,362

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **1 Claim**



1. A flat plate solar collector system comprising a plurality of generally rectangularly shaped panels arranged in precisely contiguous relation; a frame defining each panel; headers disposed along and parallel to the opposed horizontal ends of each panel; mutually cooperating recesses in adjacent corners of the frames of each pair of panels and at the ends of the headers in which the recesses are provided with cover plates secured to the frames of each of the pairs of adjacent panels; and a rigid union type coupling in each of the recesses joining

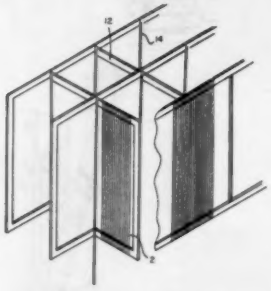
adjacent ends of the headers whereby the frames of the several individual panels are butted in side-by-side relation.

4,138,990

FIBROUS WALL MATERIAL FOR CELL STRUCTURES OF SOLAR ENERGY COLLECTORS

Eckart Hussmann, Stadecken, Fed. Rep. of Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 778,948
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 **17 Claims**



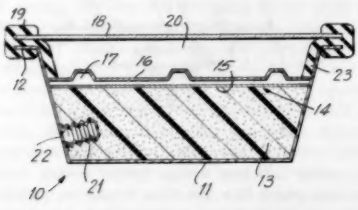
1. A fibrous wall material useful in a cell structure of a solar energy collector, said fibrous wall material comprising a supporting frame and an arrangement of fibers wherein said fibers are parallel to each other and substantially transparent to solar radiation and substantially impervious to long-wave infrared radiation, said fibers being arranged in layers in a parallel relationship, said fibers being wound or coiled over said supporting frame thereby providing a closed covering filler wall.

4,138,991

FLAT SOLAR COLLECTOR

Johann Lorenz, Dachau, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft-Man, Munich, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,687
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 7624195[U]
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 **10 Claims**



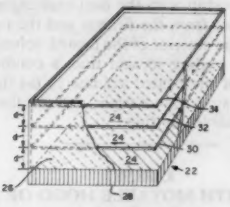
1. A flat collector for collecting solar energy, comprising: a carrier; a collector plate; a heat carrier channel system; a protective disk; said carrier comprising a metal tub filled with synthetic material, said channel system and said collector plate being located on top of the synthetic material; a rubber gasket ring; said protective disk being connected by said rubber gasket ring to an edge of said metal tub; and bellows means opening into said metal tub below said collector plate and said protective disk.

4,138,992

VISCOSITY STABILIZED SOLAR PONDS

Lloyd H. Shaffer, deceased, late of Stamford, Conn., by Dorothy B. Shaffer, executrix, 156 Interval Rd., Stamford, Conn. 06905

Filed Jul. 21, 1975, Ser. No. 597,469
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 **37 Claims**



1. The method of viscosity stabilization in a fluid solar pond comprising the steps of:

A. adding a soluble thickening, but non-solidifying, agent to the fluid in the pond; and,

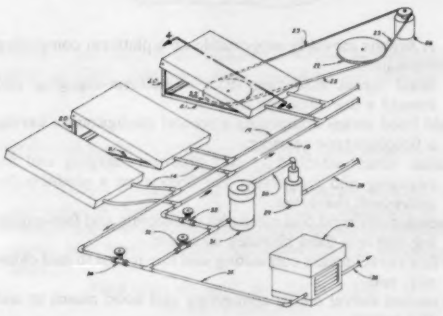
B. dividing the pond into cells having a critical transverse dimension less than that required to permit any substantial heat-induced convection in the fluid within the cells.

4,138,993

SOLAR HEATER

William M. Conley, 376 Franklin Ave., Redlands, Calif. 92373

Filed Jan. 10, 1977, Ser. No. 758,032
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 **5 Claims**



1. A low-cost solar heating and cooling system having a fluid supply manifold and return manifold comprising a plurality of solar collector modular units, each modular unit having a base attached to vertical sides to form an open containing box in which a flexible heat absorbinb tubing is disposed in a concentric semi-circular convoluted manner therein to receive incident radiation from the sun, the heat absorbing tubing being optimally spaced from each convolution on top of the base within the unit so that the amount of heat reflected to the back side of the heat absorbinb tubing is maximized, the heat absorbing tubing having a very high emissivity and hence absorptivity which maximizes the heat transferred into a heating exchange fluid circulating in the heat absorbing tubing, the modular units being connected hydraulically in series or parallel, a retaining member within each modular unit for vertically and laterally retaining the heat absorbing tubing on top of the base so that heat is absorbed by radiation and conduction, a lining having a highly reflective and heat conductive coating being positioned between the base and the heat absorbing tubing so that the contact points between the heat absorbing tubing and the coating will increase heat transfer by conduction, each

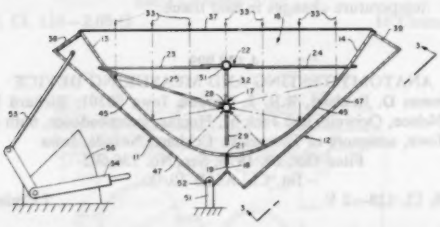
modular unit being mounted on a pulley-like rotatable base, each rotatable base having an endless pulley belt rotatably connecting to an output shaft of a high gear ratio electric motor whereby each rotatable base can be driven by the motor, with the rotatable modular units being kept in synchronization by friction applied by belt tension in the continuous belt, the motor being controlled by a timer in conjunction with limit switches so that all of the modular units are capable of rotating in phase with respect to the angle of the sun, a removable clear cover at one closed position closing the top of the open containing box over the vertical sides for preventing heat losses and creating an enclosed heat sink to increase the heat absorbed in the circulating heat exchange fluid and at another removed position in the nighttime the system may be used for cooling by circulating the heat exchange fluid, the cover is constructed of a low reflective material which minimizes reflected heat loss, the heat exchanger fluid including water and anti-freeze additives which reduce the freezing point of the circulating water.

4,138,994

SOLAR HEATING UNIT

Robert M. Shipley, Jr., 259 Candlelight Dr., Santa Rosa, Calif. 95401

Filed Jul. 14, 1977, Ser. No. 815,575
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **5 Claims**



1. A solar heating unit comprising:
a pair of similar sections and commuting hinge means each of said sections having a substantially flat exterior side and ends and an interior side, said interior side providing a semi-parabolic solar-collecting light-reflecting surface;
said sections being formed and dimensioned for assembly in a closed superimposed position with said surfaces in confronting relation and with said exterior sides and ends enclosing said surfaces and providing a closed box-like stackable structure;
said surfaces being formed to cooperatively provide when said sections are moved to an open edge-to-edge position a substantially continuous parabolic dish; and
a receiver mounted adjacent the focal point of said dish.

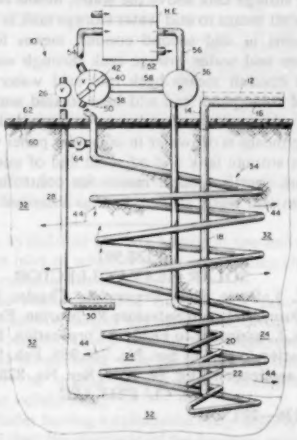
4,138,995

SOLAR ENERGY STORAGE AND UTILIZATION

Shao W. Yuan, 2021 Highboro Way, Falls Church, Va. 22043

Filed Aug. 25, 1976, Ser. No. 717,686
Int. Cl.[2] F24J *3/02*; F24H *7/00*
U.S. Cl. 126—271 **15 Claims**

1. A system for storing and utilizing solar energy comprising:
collector means for collecting solar energy and changing said solar energy to heat;
transmitting means for transmitting said heat from said collector means to a location below the surface of the ground;
distributing means comprising a closed loop piping system extending out from said location into the surrounding soil, and means for causing a heat transfer fluid to flow within said piping system, said distributing means positioned adjacent said transmitting means at said location and in efficient heat transfer relationship with said transmitting means, said distributing means extending through a volume of said ground for raising the temperature of said volume of ground thereby establishing a stored heat reservoir, said heat reservoir having a heat storage volume substantially greater than that formed by the transmitting means alone; and



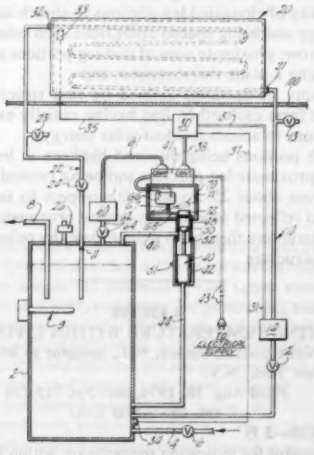
control means including valve means in said distributing means, and heat exchange means in fluid flow connection with said valve means for controlling flow of said heat transfer fluid in said distributing means and thus permitting said distributing means to function as means for extracting heat from the ground.

4,138,996

SOLAR HEATER FREEZE PROTECTION SYSTEM

William H. Cartland, Jupiter, Fla., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 820,074
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **7 Claims**



1. In a pressurized solar water heating system, a water storage tank, first conduit means for connecting a water supply to

the lower part of said tank, a solar panel having an inlet and outlet, second conduit means connecting the lower part of said water storage tank to the inlet of said solar panel for delivering water to said solar panel for heating thereby, third conduit means connecting the outlet of said solar panel to said water storage tank for delivering heated water thereto, said water storage tank and adjacent end of said second conduit means being located in an area where freezing temperatures are not encountered, means for maintaining a pressurized air space in the water storage tank above the water, means connecting said third conduit means to said water storage tank in said air space, pump means in said second conduit means for circulating water from said water storage tank through said solar panel and third conduit means back into said water storage tank when said solar panel can add heat to said water, said solar panel being located above said water storage tank so that when said pump means is off water in said solar panel will drain into said water storage tank and adjacent end of said second conduit means, fourth conduit means for controllably directing water from said water storage tank to a desired location.

4,138,997

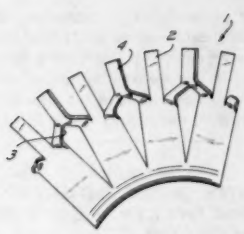
SOLAR HEAT COLLECTOR

Gerald E. LaPorte, East Brunswick; Charles L. Osterkorn, North Brunswick, and Salvatore M. Marino, East Brunswick, all of N.J., assignors to Fedders Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 766,955, Feb. 9, 1977. This application Aug. 29, 1977, Ser. No. 828,758

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **12 Claims**



1. In a solar energy collector fin structure to be secured to and extend from an object to provide increased solar energy absorbtion ability to the object, the improvement comprising:

a plurality of elongated leg portions to absorb incident solar energy and being spaced apart from each other to form a first row, proximate ones of said leg portions substantially defining a plane therebetween; and

a plurality of openings defined by said structure, spaced apart from each other, and having radially extending tab portions to absorb incident solar energy;

said tab portions being disposed between at least some of said proximate leg portions and being twisted at an angle of from about 25° to 60° with respect to said plane to direct reflected solar energy against proximate portions of said structure thereby to reduce losses by reflectance from said structure.

4,138,998

INDICATING TEMPERATURE WITHIN LIVING TISSUE

Markus Nowogrodzki, Sussex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,220

Int. Cl.[2] A61B *5/00*

U.S. Cl. 128—2 H **4 Claims**

1. Apparatus for indicating temperature within living tissue, comprising:

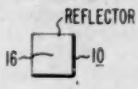
impedance varying reflector means responsive to temperature changes for changing its impedance as a function of temperature;

said reflector means adapted for implantation within said tissue for positioning to reflect impinging microwave signals;

a microwave signal transmitter providing said microwave signal to said reflector at a predetermined frequency;

a meter for indicating the level of a reflected microwave signal reflected from said reflector in response to said microwave signal from said transmitter;

applicator means, adapted for contact with said tissue, for



providing a substantially matched impedance at a given temperature for coupling microwave signals to and from said tissue; and

means for coupling said transmitted microwave signal from said transmitter to said applicator means for application to said tissue and said reflector and for coupling to said meter a microwave signal reflected to said applicator means from said reflector;

whereby said reflector in response to changes in temperature of said tissue from said given temperature will cause the level of said reflected signal to change as a function of said temperature changes in said tissue.

4,138,999

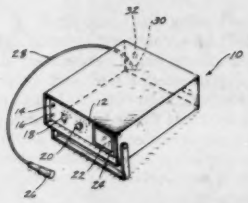
ANATOMY TESTING AND MEASURING DEVICE

Thomas D. Eckhart, R.R. 2, Nevada, Iowa 50201; Richard L. Nelson, Oelwein, and Jack M. Hoglan, Independence, both of Iowa, assignors to Thomas D. Eckhart, Nevada, Iowa

Filed Oct. 29, 1976, Ser. No. 736,692

Int. Cl.[2] A61B *10/00*

U.S. Cl. 128—2 V **7 Claims**



1. An anatomy testing and measuring device for determining pregnancy and measuring backfat, copmprising,

a housing having an outer surface,

a first circuit means within said housing for electrically generating ultrasonic pulses, transmitting said pulses into an animal body, receiving the echoes of said pulses from said animal body, selectively processing said pulses for visual display, and visually displaying said pulses to determine pregnancy in a sow, pregnancy in a cow and to measure the backfat of cattle,

said first circuit means having electrically interconnected transmitter means, receiver means, and a cathode ray tube display means with a multiposition mode switch means,

said cathode ray tube display means having a cathode ray tube on said outer surface, a horizontal sweep generator, a horizontal deflection amplifier, a vertical deflection amplifier, a gain control means, and said mode switch means electrically interconnected,

said mode switch means having at least first, second and third positions, said first position selecting a first predetermined sweep rate of said sweep generator and a first

predetermined level of the base line of the display on said cathode ray tube to determine pregnancy in a sow, said second position selecting a second predetermined sweep rate of said sweep generator and a second predetermined level of said base line of the display on said cathode ray tube to determine pregnancy in a cow and said third position selecting a third predetermined sweep rate of said sweep generator and a third predetermined level of said base line of the display on said cathode ray tube to determine backfat thickness,

a transducer means remote from said housing and electrically connected to said first circuit means for transmitting ultrasonic pulses into said animal body and receiving the echoes of said pulses, and

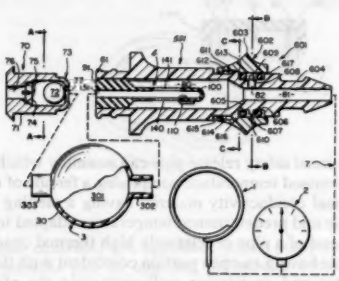
power means for powering said first circuit means.

4,139,000

BLEEDABLE PRESSURE SYSTEM FOR MEASURING OR TESTING

Donald H. Peeler, Hendersonville, N.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,340
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—2.05 G **16 Claims**



1. A bleedable pressure system having a plenum and also comprising a pump having a chamber the interior of which is variable in volume, said pump also having an inlet, and an outlet, said outlet being connected to said chamber and connecting the interior thereof to the interior of said plenum, and said inlet being connected to said chamber for connecting the interior thereof to an atmosphere surrounding said system;

said inlet incorporating therein a check valve means, said check valve means being responsive to decrease in interior volume of said chamber to substantially prevent communication between the interior of said chamber and said atmosphere;

said outlet incorporating therein a regulator valve means, said regulator valve means being responsive to decrease in interior volume of said chamber to open a substantial amount for admitting gas from the interior of said chamber to said plenum;

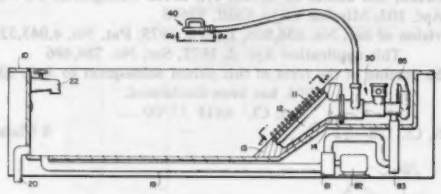
said check valve means being leaky, and said regulator valve means being responsive to regulated gas flow through said outlet from the interior of said plenum when the gas pressure in said plenum is greater than the gas pressure in the interior volume of said chamber, such as to cause gas pressure in said plenum to decrease at a predetermined substantially constant rate, said gas flow being less than leakage of said check valve means.

4,139,001

HYDRO-MASSAGE AND PULSATOR APPARATUS

Lloyd C. Macabee, 552 Bean Creek Rd., No. 41, Scotts Valley, Calif. 95060

Filed Oct. 8, 1976, Ser. No. 730,987
Int. Cl.[2] A61H *7/00, 9/00*
U.S. Cl. 128—64 **14 Claims**



1. An apparatus for operating on a high pressure water stream for producing a highly turbulent water flow comprising:

a. a generally cylindrical housing having at one end a volute through the inlet of which a water stream may enter, and having an outlet at the other end;

b. a rotatable shaft extending through the housing and mounted at approximately the center line of the housing;

c. an impeller affixed to the shaft at the volute end of the housing and cooperating with the volute for turning the shaft under the urging of the water stream entering through the volute inlet;

d. a rotor cylinder having a cylindrical body slightly smaller in diameter than the diameter of the housing, mounted on the rotatable shaft between the volute impeller and the output end and having a plurality of bores generally parallel to the shaft and spaced uniformly around the cylindrical body.

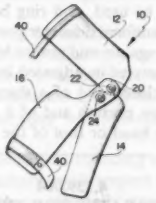
e. a plate mounted to the housing in a fixed position perpendicular to the rotatable shaft, immediately adjacent to the rotor cylinder and having a hole pattern which matches that of the output end of the rotor cylinder.

4,139,002

UNIVERSAL KNEE ORTHOSIS

Manuel J. Almeida, 20 Ferreira Dr., Tiverton, R.I. 02878

Filed Sep. 12, 1977, Ser. No. 832,425
Int. Cl.[2] A61F *3/00*
U.S. Cl. 128—80 C **12 Claims**



1. An orthosis for the knee or elbow joint of a limb comprising, an upper forward member, a lower forward member and a rear member, means for positioning said upper member to said limb above said joint, and means for positioning said lower forward member and said rear member to said limb below said joint, both said forward members being independently hinged to said rear member for separate pivotal motion with respect to said rear member, said upper and lower forward members being further positioned respectively above and below said joint and cooperatively forming an opening for receipt of said joint, said upper forward member being limited in its forward pivotal movement by abutting contact between the upper edge of said lower forward member and the lower edge of said

upper forward member, said abutting edges defining a stop so as to prevent hyperextension of said joint.

4,139,003

WATERPROOF CAST PROTECTOR

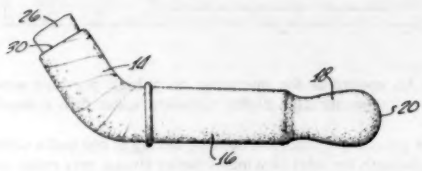
John D. Little, 25097 Champlain Rd., Laguna Hills, Calif. 92653, and James Z. Cloud, Jr., 25839 Marguerite Pkway., Apt. 103, Mission Viejo, Calif. 92675

Division of Ser. No. 636,508, Dec. 1, 1975, Pat. No. 4,043,326. This application Apr. 4, 1977, Ser. No. 784,496

The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.

Int. Cl.[2] A61F *13/00*

U.S. Cl. 128—82 **4 Claims**



1. A unitary, flexible covering to seal a cast on an individual's arm or leg and adapted to accommodate limbs and casts of a considerable range of lengths, comprising:

an elongate tube of resilient material for receiving said arm or leg and said cast, said tube being closed at one end and open at the other end;

a considerable length of said elongate tube at said open end having a uniform, smooth inside relaxed diameter smaller than the diameter of that portion of said arm or leg over which said uniform diameter portion of said tube is adapted to extend, said uniform diameter portion forming a sealing portion of adjustable length;

a resilient, solid ring having greater thickness than said tube formed at the open end of said elongate tube, said ring forming a base structure for a roll of said uniform diameter portion and being adapted to be rolled along said arm or leg to a selected longitudinal position a substantial distance above the cast but below the end of the limb, the size and position of said roll depending upon the length of said limb and said cast;

said uniform diameter portion being of sufficient length that said roll is within the length of said uniform diameter portion for the entire range of limb and cast sizes on which it is adapted to be used, said ring being adapted to resiliently bias said uniform diameter portion at the location of said roll tightly against said arm or leg to seal the open end of said tube at any of its adjusted lengths; and

a portion at the closed end of a shape different from said uniform diameter portion and of a shape and size to accommodate the hand or foot of the user.

4,139,004

BANDAGE APPARATUS FOR TREATING BURNS

Harry Gonzalez, Jr., 342 3rd Ave., La Puente, Calif. 91744

Filed Feb. 17, 1977, Ser. No. 769,443

Int. Cl.[2] A61N *1/00*

U.S. Cl. 128—82.1 **16 Claims**

1. A bandage having a coolant transfer means adapted for use in accelerating healing and reducing pain relating to burn areas of the human body, wherein the bandage comprises:

an envelope having sealed inner and outer sheets of impervious material and defining a chamber;

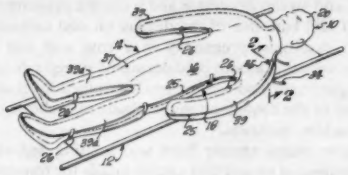
an outer protective cover attached to said outer impervious sheet;

an inner pliable metallic liner secured to said inner impervious sheet arranged to directly contact said burn area;

an inlet means mounted in said envelope;

an outlet means mounted in said envelope;

coolant means to be circulated through said chamber



wherein the temperature of said coolant is transferred to said metallic liner; and

fastening means to secure the bandage to the body.

4,139,005

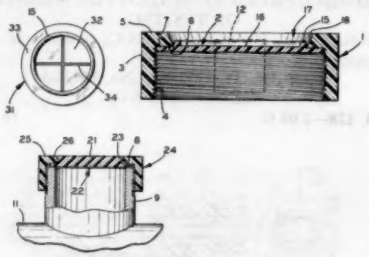
SAFETY RELEASE PIPE CAP

Gilbert C. Dickey, 23185 Woodville Rd., Genoa, Ohio 43430

Filed Sep. 1, 1977, Ser. No. 829,919

Int. Cl.[2] F16L *55/10*

U.S. Cl. 138—89 **8 Claims**



1. A thermal safety release pipe cap assembly which opens at a predetermined temperature comprising a ferrule of relatively low thermal conductivity material having a melting temperature above said predetermined temperature adapted to be fitted over the end of a pipe of relatively high thermal conductivity, said ferrule having an open portion coincident with the interior of the pipe and an interior wall embracing the pipe end; a closure element for said open portion of said ferrule frictionally maintained within said ferrule, said element being of a material which melts at said predetermined temperature to expose the open portion of said ferrule to the pipe interior; and means for sealing securing said assembly to the pipe comprising an inwardly extending flange on said ferrule which overlays the end of the pipe and a peripheral wall of uniform thickness on said closure element having outer perimeter elements frictionally engaging the interior wall of said ferrule, said ferrule, when secured to the pipe, pressing said flange upon said peripheral wall to clamp said peripheral wall in intimate heat transfer relationship to the pipe between said flange and the end of the pipe.

4,139,006

FEMALE INCONTINENCE DEVICE

Arthur E. Corey, 5232 Oak Island Rd., Orlando, Fla. 32809

Filed Mar. 18, 1977, Ser. No. 778,952

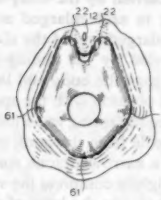
Int. Cl.[2] A61F *5/46*

U.S. Cl. 128—127 **18 Claims**

1. A device for being removably inserted into the vagina of a female patient for controlling urinary incontinence, said device comprising:

a body section for being inserted completely into the vagina, with said body section having a circumferential surface therearound for being gripped by the walls of the vagina for restricting the relative movement therebetween;

a protruding section rigidly attached to said body section and oriented for displacing a surface of the superior wall of the vagina, and an intermediate section of the urethra adjacent thereto, toward the pubic bone for reducing the



urethro-vesicle angle, with said protruding section including means for folding a surface of the vaginal wall having the urethra adjacent thereto for laterally compressing the urethra therebetween, thereby restoring normal control of the flow of urine from the bladder to the urethral opening.

4,139,007

METHOD AND APPARATUS FOR CONTRACEPTION

Harvey Diamond, c/o Saul Epstein, 1880 Century Park East, Suite 500, Los Angeles, Calif. 90067

Filed Sep. 20, 1976, Ser. No. 725,005
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—138 R **2 Claims**

1. A male contraceptive appliance which comprises:
a stiff pressure pad for applying pressure to a male urethra said pad being shaped to concentrate pressure on said urethra; and
a strap for bearing on the top of the penis and for holding said pressure pad against the underside of said penis whereby said urethra will be closed during coitus, said strap not applying pressure to the sides of the penis, and the area of said strap being such as to apply substantially less unit pressure to the top of said penis with respect to the pressure being applied in the region of said urethra, said pressure pad and said strap being a single molded piece.

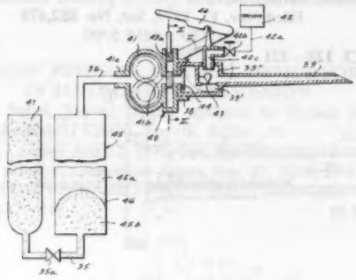
4,139,008

CONTROLLED-DOSE INJECTION APPARATUS

Wolfgang Wagner, Klosterfelder Weg 29, 1 Berlin 27, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 634,742, Nov. 21, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,301
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—215 **9 Claims**

1. An injecting apparatus comprising a medicament container having a hollow interior adapted to contain a body of a liquid medicament; a positive-displacement pump having an intake and an output and operable to pass a liquid from said intake to said output; a conduit connecting said intake to said container; means for forcing said medicament through said conduit from said container to said intake; a hollow injecting needle connected to said output; means for operating said pump and thereby feeding a predetermined quantity of said medicament to said needle, whereby when said needle is implanted in a patient said quantity is injected into such patient; and a partition subdividing said interior into a medicament compartment holding said body of medicament and a pressur-



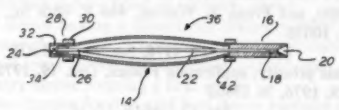
izable compartment, said partition being movable in said container to increase the volume of said pressurizable compartment and decrease the volume of said medicament compartment, said means for forcing including means for pressurizing said pressurizable compartments with a gas.

4,139,009

HYPODERMIC NEEDLE ASSEMBLY WITH RETRACTABLE NEEDLE COVER

Marcial Alvarez, 225 E. Jersey St., Elizabeth, N.J. 07206

Continuation-in-part of Ser. No. 744,405, Nov. 23, 1976, abandoned. This application Sep. 27, 1977, Ser. No. 836,977
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 N **10 Claims**

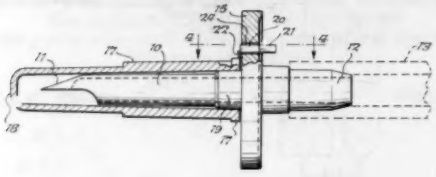


1. A disposable hypodermic needle assembly, including a permanently attached but retractable covering means for the forward portions of the needle; said assembly comprising in combination:
a hub portion adapted for attachment to the outlet end of a syringe, said portion including a central passageway for enabling liquid flow to or from the outlet of said syringe;
a hollow needle connected to said hub with the inlet end thereof communicating with the central passagwway of said hub;
an annular slide member surrounding said needle and being longitudinally slideable with respect thereto, said member being positionable to normally cover the said forward portion of said needle; and
a plurality of elastically resilient arms extending between said hub portion and said slide member, said arms in their unstressed condition normally maintaining said slide member in said position covering the forward portion of said needle; said arms being elastically bowable away from the longitudinal axis of said needle upon said slide member being urged toward said hub portion by contact of said slide member with the skin of a patient during injection of said needle beneath said skin; the bowing of said arms away from said longitudinal needle axis generating a restoring force for urging said slide member back over said needle forward portion upon withdrawal of said assembly from contact with said skin.

4,139,010
STERILITY GUARD FOR PIERCING DEVICES, CONNECTORS AND NEEDLES

Edward G. Dykstra, East Aurora, N.Y., assignor to Ethox Corporation, Buffalo, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,478
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—221 8 Claims

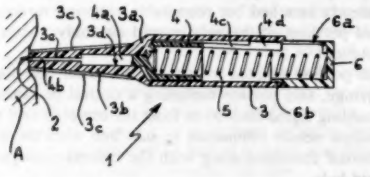


1. In combination, a tubular member for medical use and a tubular guard for enclosing an end portion of said tubular member to maintain sterility thereof, said guard being adapted to telescope over said member, said member having a portion projecting radially therefrom and having an opening therein, said guard having a portion projecting from the end thereof adjacent to said radially projecting portion, the projecting portion of said guard being of elastomeric material and having a head portion larger than said opening adapted to be forced through said opening by compression of said head portion and expand after passage through said opening to prevent withdrawal thereof, said guard projecting portion having a frangible neck portion adapted to rupture when said guard is forcibly removed from said tubular member and thus signal the fact that the guard has been removed from the tubular member.

4,139,011
DEVICE FOR DRIVING A NEEDLE INTO A PATIENT

Jean L. P. M. Benoit, 74, rue du Fort Saint-Irenee, Lyon, France (69005), and Frank Z. Warren, 446 E. 88th St., New York, N.Y. 10028

Filed Dec. 17, 1976, Ser. No. 751,879
Claims priority, application France, Dec. 19, 1975, 75 39781; May 19, 1976, 76 15862
Int. Cl.[2] A61B 17/34
U.S. Cl. 128—329 R 7 Claims



1. A device for driving a needle into the tissue of a patient, comprising:

a needle having a pointed tip and having a flat head joined to said tip;

a body having a bore extending thereinto and having an opening at the outlet end of the bore to be pressed against the tissue of the patient, the needle being inserted into the bore near said opening, and the bore having an enlarged zone with a closed end opposite said outlet end of the body;

a sliding pusher member in the bore behind the head of the needle and shaped to fit closely in the bore and slide therein, the sliding pusher member having an enlarged end in said enlarged zone of the bore and said sliding pusher member having at its other end a needle receiving slot shaped to receive the flat needle head, said other end being split at said slot and spread to receive and retain said flat head in the slot until the sliding pusher member is actuated to drive the needle, and the sliding pusher member being operative when actuated to drive the needle out of the bore into the tissue of the patient;

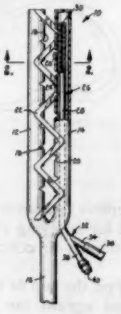
actuating means carried by the body and including a compression spring in said enlarged zone of the bore and engaging the enlarged end of the sliding pusher member, and means carried by the sliding pusher member and operative to engage the body and latch the pusher member in retracted position with the spring compressed, and releasable to free the spring to actuate the sliding member to drive the needle from the bore; and

said bore having a narrowed zone spaced from said outlet and shaped to lightly compress the split end of the sliding pusher member to grip the head of the needle to retain it in the slot while the sliding pusher member is retracted with the split end thereof in said narrowed zone, and said bore having an enlarged zone joining said narrowed zone to said outlet, whereby the needle receiving end of the sliding member is released from gripping the head of the needle when the split end passes from the narrowed zone into the enlarged zone.

4,139,012
DRAIN CONSTRUCTION

Carroll L. Zahorsky, 1008 Valentine Rd., Kansas City, Mo. 64111

Filed Mar. 25, 1977, Ser. No. 781,167
Int. Cl.[2] A61M 27/00
U.S. Cl. 128—350 R 11 Claims



1. A device for the passage of fluid between a congested area characterized by the presence of material capable of blocking the passage and a location removed from the congested area, said device comprising:

a first tubular member having a plurality of openings disposed along the length of the member,

said openings being located between two parallel imaginary planes extending through opposed points on the surface of the member;

a second tubular member disposed in spaced apart relationship to said first member and having a plurality of openings disposed along the length of the second member,

said openings in said second member being located between two parallel imaginary planes extending through opposed points on the surface of said second member and in facing relationship to the openings in said first member; and

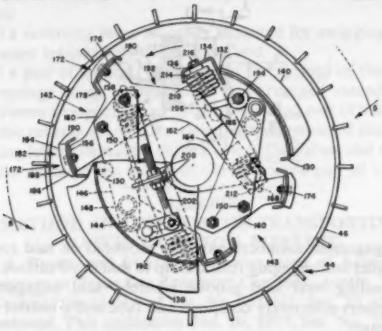
a barrier bar extending back and forth from said one member to said second member along the lengths of said members and lying in one of said imaginary planes,

said barrier bar being disposed to block material from said openings of said first and second members which would clog the openings while accommodating the flow of fluid toward said openings.

4,139,013
THRESHING ROTOR FOR A COMBINE

Edward J. Hengen, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 20, 1977, Ser. No. 843,987
Int. Cl.[2] A01F *12/18*
U.S. Cl. 130—27 H 25 Claims



1. In a threshing device for agricultural crops including a concave, an improved threshing rotor generally concentrically associated with and at least partially wrapped by the concave so that a threshing zone is created between the rotor and concave, said zone having an inlet for receiving untreated crop material and an outlet for discharging material from which grain has been separated, the rotor comprising:

a rotor frame having opposite ends and an axis of rotation and including pivot means;

a first threshing bar assembly, including a first generally axially extending threshing bar having leading and trailing edges, supported by the pivot means for rocking movement between positions corresponding to maximum and minimum concave clearance between the threshing bar and the concave, the threshing bar moving in a crop threshing relationship to the concave as the rotor is rotated;

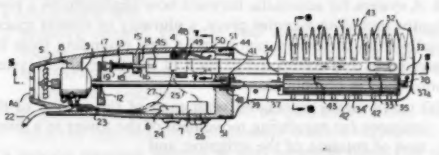
resilient means, supported by the frame, engaging the threshing bar assembly for urging the threshing bar in the direction of reducing concave clearance; and

stop means including a first part carried by the frame and a second part carried by the threshing bar assembly, the first part being engageable by the second part to limit the movement of the threshing bar in the direction of reducing concave clearance.

4,139,014
COMBINATION HAIR STYLING/HAIR CURLING DEVICE

Willis O. Rowland, Rochdale Village Sta., P.O. Box 751, Jamaica, N.Y. 11434

Filed Apr. 19, 1977, Ser. No. 788,892
Int. Cl.[2] A45D *24/00*
U.S. Cl. 132—11 A 8 Claims

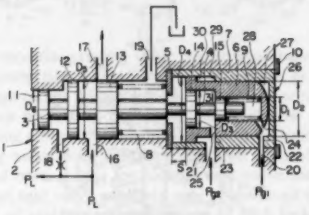


1. A combination hair styling/curler combination comprising a housing, a source of heat positioned in the housing, a comb attachment or curler attachment adapted to be removably secured to the housing, a heating rod connected to said source of heat and extending outwardly of said housing, said rod being adapted to be extended into either the comb attachment or the curler attachment to provide a source of heat thereto, said comb attachment being comprised of a housing having a lower portion, rotatable fan means disposed therein and an upper portion receiving a pair of individual combs therein, means connecting said individual combs for reciprocatory movement with respect to each other, and means in said first mentioned housing driving said fan and said individual combs.

4,139,015
HYDRAULIC PRESSURE CONTROL DEVICE FOR USE IN AUTOMATIC TRANSMISSION

Takahiro Sakai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 27, 1976, Ser. No. 709,220
Claims priority, application Japan, Sep. 25, 1975, 50-114823
Int. Cl.[2] B60K *41/00;* F01B *7/20;* F15B *13/042;* G05D *11/02*
U.S. Cl. 137—115 16 Claims



9. A hydraulic pressure control device actuated by and responsive to the pressure of an actuating fluid for use in an automatic transmission comprising:

a first sleeve;

spool valve means having at least one land slidingly fitted in said first sleeve for controlling a bleed-off means of a hydraulic line pressure being fed from a hydraulic pressure source to a hydraulic servo-device by displacement of said land;

a stationary sleeve having an inner circular cross section and a closed end rigidly fitted in said first sleeve;

an inner sleeve having a closed end slidingly fitted in said stationary sleeve, the closed ends of said stationary sleeve and said inner sleeve and the inner curved wall of said stationary sleeve forming a first space;

an annular stopper fixed in said first sleeve partially closing the other end of said stationary sleeve, said stopper limiting the movement of said inner sleeve;

a hollow cylinder formed in said inner sleeve, the closed end of said inner sleeve forming a closed end of said cylinder;

a subsidiary spool having at least one land slidingly mounted in said hollow cylinder, said land of said subsidiary spool, the closed end of said cylinder and the wall of said cylinder forming a second space;

means rigidly interconnecting said subsidiary spool and said spool valve means for displacing said land of said spool valve means by the displacement of said subsidiary spool;

a first spring confined between said land of said spool valve means and said annular stopper;

a second spring confined between a land of said subsidiary spool and said inner sleeve, said second spring having an initial load for normally maintaining said inner sleeve in a position to minimize said first space;

fluid pressure bias means acting in opposition to said springs; and

aligned ports in said first sleeve and said stationary sleeve, and a port interconnecting said first and second spaces for admitting actuating fluid to said first and second spaces, wherein when actuating fluid is fed into said first and second spaces, then said subsidiary spool is displaced according to a first level of actuating fluid pressure until actuating fluid pressure exceeds said initial load, said inner sleeve and said subsidiary spool are displaced when actuating fluid pressure is further increased according to a second level of pressure, and said subsidiary spool is then

only displaced when actuating fluid pressure is further increased according to a third level of pressure so that the hydraulic line pressure may be controlled for the different actuating fluid pressure levels according to the displacement of the land of said spool valve means.

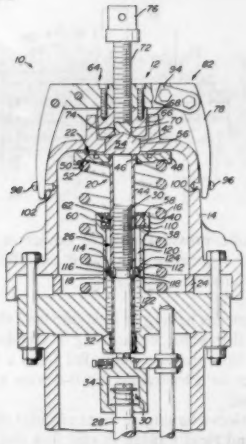
4,139,016
TAMPERPROOF HYDRANT LOCK WITH CONTROLLED SHOCK ABSORBER

Francis R. Byrnes, Philadelphia, Pa., assignor to Center Compression Lock Company, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 788,710, Apr. 19, 1977, Pat. No. 4,072,163, and a continuation-in-part of Ser. No. 697,581, Jun. 18, 1976, Pat. No. 4,062,375. This application Aug. 31, 1977, Ser. No. 829,415

Int. Cl.[2] E03B *9/02*; F16K *31/48, 35/06*

U.S. Cl. 137—296 **17 Claims**



1. In a fire hydrant including a bonnet having an aperture, a housing having an internal chamber, an operating rod extending within the housing chamber, a yoke coupled to the operating rod, and a plunger coupled to the yoke for opening and closing a valve, a tamperproof lock comprising:

a spring mounted on the housing:

power transmitting means mounted on the operating rod for transmitting power to said rod against said spring;

first hydraulic means operatively associated with said power transmitting means for controlling gradual opening of the valve over a first delay interval of time; and

second hydraulic means operatively associated with said power transmitting means for controlling gradual closing of the valve over a second delay interval of time.

4,139,017
FLUID FLOW CONTROL AND MOUNTING THEREOF

Louis F. Hamilton, Sr., and Louis F. Hamilton, Jr., both of R.R. 1, Box 85D, Weatherford, Okla. 73096

Filed Aug. 8, 1977, Ser. No. 822,391

Int. Cl.[2] F16K *7/06*

U.S. Cl. 137—343 **5 Claims**

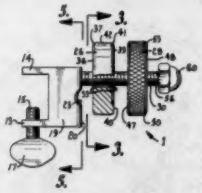
1. A fluid flow control and mounting thereof for retaining a tube in a constant position relative to a stationary structural member and for selectively constricting said tube to control the flow of a working fluid flowing from a source thereof through a passage in said tube, said fluid flow control and mounting thereof comprising:

(a) an anvil having an anvil surface for engagement by a tube;

(b) a mounting connected to said anvil, said mounting being detachably connectible to a stationary structural member for retaining said anvil in a constant position relative to said structural member;

(c) said anvil surface including a concave groove positioned transversely thereto for receiving said tube said groove being curved longitudinally and having a roughened surface for frictional engagement by a tube;

(d) a rod spaced from said groove and extending from said anvil surface;



(e) engagement members movably mounted on said rod in parallel and engaging relationship to said anvil surface and extending over said groove whereby said engagement members selectively compress said tube and constrict said passage;

(f) said engagement members respectively comprising discoidally shaped adjustment knob and clamping disc;

(g) said adjustment knob and said clamping disc respectively including peripheral margins; and

(h) the peripheral margin of said adjustment knob extending a slight distance beyond the peripheral margin of said clamping disc for facilitating grasping and rotation of said adjustment knob over said clamping disc.

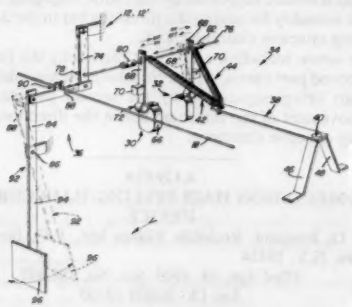
4,139,018
SYSTEM FOR AUTOMATIC FORWARD BOW ALIGNMENT ON WATER DRIVE PIVOT

Jay C. Groelz, Phillips, Nebr., assignor to Heinzman Engineering, Inc., Grand Island, Nebr.

Filed Apr. 11, 1977, Ser. No. 786,668

Int. Cl.[2] B05B *3/12*

U.S. Cl. 137—344 **12 Claims**



1. A system for automatic forward bow alignment on a pivot irrigator including a center pivot, a plurality of towers spaced radially from the center pivot, and a pipe extending from the center pivot and connected to each of the towers, the system comprising, in combination:

(a) valve means associated with each of the towers of the irrigator for regulating movement of the tower in a direction of rotation of the irrigator; and

(b) sensor means for detecting alignment of each of the towers along the desired forward bow of the irrigator and controlling the valve means of each of the towers as a function of alignment and misalignment of a one of the towers with the other of the towers along the curve of the desired forward bow, the valve means of each of the towers includes, in combination:

(1) a pair of valves mounted on the irrigator at a respective one of the towers;

(2) reversing means mounted on the irrigator and connected to the valves for selectively holding one of the valves closed; and

(3) linkage means mounted on the irrigator and connected to the valves and to the sensor means for closing the open other of the valves when the one of the towers moves ahead of the desired forward bow, the reversing means including, in combination:

(4) a reversing lever pivotally mounted for swinging movement transversely of the pipe; and

(5) a pair of springs, with each of the springs of the pair of springs being connected to and arranged extending between a respective one of the associated pair of valves and the reversing lever, for swinging movement of the reversing lever alternately closing one of the valves and opening the other of the valves of the associated pair of valves.

4,139,019

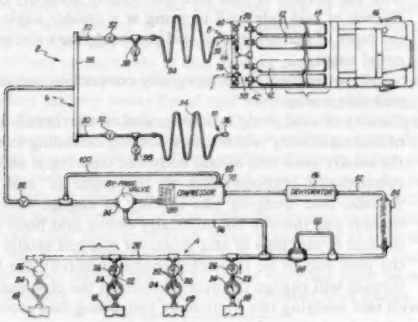
METHOD AND SYSTEM FOR TRANSPORTING NATURAL GAS TO A PIPELINE

Don A. Bresie, and Donald W. Fowler, both of Austin, Tex., assignors to Texas Gas Transport Company, Austin, Tex.

Continuation-in-part of Ser. No. 651,242, Jan. 22, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 758,154

Int. Cl.[2] F17C *5/02*

U.S. Cl. 137—351 **26 Claims**



1. A system for transporting natural gas from a gas well location to a terminal facility located at a delivery location, including:

pressure vessel means mounted for transporting by a transport vehicle, and including: at least one pressure vessel; and vehicle manifold means connected with said pressure vessel, and including vehicle coupling means;

a first terminal located at said gas well location, and including: means for gathering natural gas from gas well(s) at said gas well location; loading manifold means; loading coupling means for detachably connecting said loading manifold means with said vehicle coupling means; and a loading conduit means connecting said gathering means with said loading manifold means, said loading conduit means including compressor means, and said compressor means including:

a compressor unit;

a pressure control valve in said loading conduit means, located before said compressor unit; a by-pass flow control valve in said loading conduit means, located after said compressor unit; and

a by-pass conduit connecting said by-pass flow control valve with the inlet side of said pressure control valve; and

a second terminal located at said terminal facility at said delivery location, and including: off-loading manifold means; off-loading coupling means for detachably connecting said off-loading manifold means with said vehicle coupling means; and off-loading conduit means connected with said off-loading manifold means, and including heater means for heating compressed natural gas taken from said pressure vessel, to eliminate the formation of hydrates therein.

4,139,020

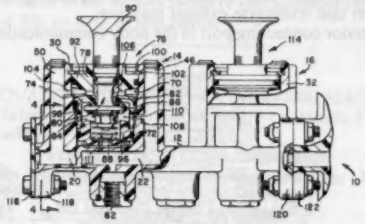
MODULAR DASH CONTROL VALVE MANIFOLD

Milan J. Sebo, Elyria, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 4, 1977, Ser. No. 784,222

Int. Cl.[2] F16K *11/04*

U.S. Cl. 137—454.2 **6 Claims**



1. In a modular control valve assembly, a base having an inlet for connection with a fluid pressure source and an outlet, first passage means within said base communicating with said inlet, a boss projecting from said base, said boss including a wall defining a bore within said boss, said bore having an open end facing away from said base, a valve assembly received within said bore, means for locking said valve means in said bore so that said valve assembly may be removed through the open end of said bore upon release of said locking means, second passage means extending through the wall of said boss to communicate said valve assembly with said first passage means so that said valve assembly controls communication between said inlet and outlet, said first passage means including a first portion extending through said base and a second portion defined within the wall of the boss, said second passage means including a first section extending through said base and a second section defined within the wall of said boss, said second portion and said second section each extending substantially parallel to the axis of said bore and being spaced circumferentially from each other around said bore, said first portion of said first passage means and said first section of said second passage means being coplanar and parallel with one another, said first portion intersecting said second portion and said first section intersecting said second section at the end of said boss where the latter joins the base, and a pair of axially spaced conduits extending through the wall of said bore to communicate the latter with said second portion and said second section respectively, said valve assembly controlling communication between said axially spaced conduits.

4,139,021

HYDRAULIC CONTROL INSTRUMENTALITY

Roger H. Ailshie, Lewis, Kans.; Kenneth G. McMillen, deceased, late of New Castle, Ind., and by Leanne S. McMillen, administrator, Fort Wayne, Ind., assignors to Cross Manufacturing, Inc., Lewis, Kans.

Filed Jul. 19, 1972, Ser. No. 273,330

Int. Cl.[2] F15B *13/08*

U.S. Cl. 137—596.13 **7 Claims**

1. In a multiple spool hydraulic control valve having a plurality of directional control valve sections intersecured as a single assembly and defining inlet and outlet ducts extending transversely through the assembly; an end section for said assembly, comprising:

a body having a longitudinal face securable in sealed relationship to one end of said assembly;

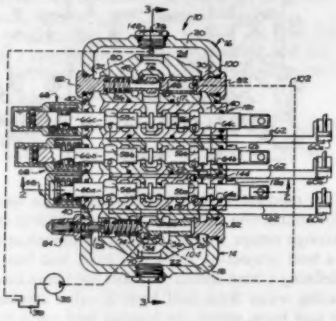
exhaust passage means in the body including a longitudinally extending exhaust passage adjacent a side of the body remote from said face, and two transverse exhaust passages each extending from said longitudinal exhaust passage to said face to communicate with said outlet ducts of the assembly;

centrally disposed inlet passage means in the body extending transversely from said face and communicating with said inlet duct of the assembly;

transfer passage means in the body communicating with said longitudinal exhaust passage and including a pair of transverse leg passages spaced from and straddling said inlet passage means; said body having a longitudinal bore therethrough intercepting said transverse exhaust passages, inlet passage means and said leg passages;

means cooperating with said body for closing said opposite ends of said longitudinal bore and separating the bore from said transverse exhaust passages;

an exterior connecting port in the body communicating with



at least one of said exhaust and inlet passage means for delivery of fluid to or discharging fluid from said assembly;

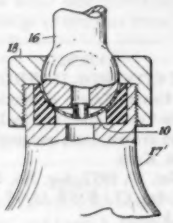
flow control instrumentality shiftably mounted in said longitudinal bore for selectively interconnecting said inlet passage means with said leg passages to control said delivery of fluid to or discharge of fluid from said assembly, said instrumentality being pressure actuated to shift within said longitudinal bore, there being means in the body for admitting actuating pressure to the bore between the instrumentality and said closing means.

4,139,022

ARTICLE FOR REDUCING THE FLOW OF WATER TO A SHOWER HEAD

John C. Marmon, Jr., Lake Park, Fla., assignor to Water Save, Inc., Lake Worth, Fla.

Filed Jul. 18, 1977, Ser. No. 816,288
Int. Cl.[2] B05B 1/30
U.S. Cl. 138—44 **3 Claims**



1. An article for reducing the flow of water from a swiveling shower head comprising:

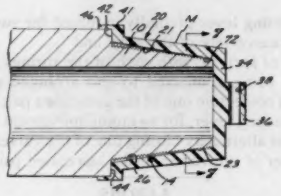
a single disc shaped shower head insertion piece having a circular opening in its center, said disc having one surface concaved inward from its outer circumference to said opening disposed adjacent the ball member of said swiveling shower head and a second surface convexed outward from the outer circumference to said opening disposed adjacent the socket member of said swiveling shower head, said opening having an annular raised ridge means circumscribed there about and extending from said inward concave surface for disposition within a water supply line to retain alignment of said circular opening with said water supply line when said shower head is swiveled about its longitudinal axis.

4,139,023

PIPE THREAD PROTECTOR

William M. Turley, 3752 1/2 Lewis, Long Beach, Calif. 90813

Filed Dec. 5, 1977, Ser. No. 857,128
Int. Cl.[2] B65D 59/06
U.S. Cl. 138—96 T **8 Claims**



1. A protector for the tapered threads formed at one end of a pipe, such protector being formed of a resilient material and comprising:

a cup-shaped body having tapered side walls, one side of which is formed at its outermost portion with threads that engage solely the outermost of said pipe threads to temporarily retain said protector upon said one end of said pipe with the portion of said side wall axially inwardly of the threads of said side wall tapering at a greater angle than the taper of said one end of said pipe to define a circumferential space;

a radially extending cover integrally connecting one end of said side walls;

a plurality of axial wedging ribs formed on the threaded wall of said main body within said space and extending towards the axially inner end of said body and tapering at an angle substantially corresponding to the angle of said pipe threads, said wedging ribs serving to engage said pipe threads and thereby automatically center said body upon the end of said pipe as said protector is urged axially over the pipe end to be thereafter rotated whereby the body threads will engage the outer threads of the pipe end; and

with said wedging ribs frictionally restraining said protector against rotation relative to the pipe end.

4,139,024

THERMAL INSULATION STRUCTURE

Alexander S. Adorjan, Pearland, Tex., assignor to General Electric Company, Fairfield, Conn.

Continuation of Ser. No. 167,258, Jul. 29, 1971, abandoned. This application Jan. 13, 1975, Ser. No. 540,509
Int. Cl.[2] F16L 9/14
U.S. Cl. 138—149 **7 Claims**

1. A double-walled heat insulating structure for use in an application where the high and low temperatures to which the structure will be exposed constitute an operating temperature range comprising:

an inner wall;

an outer wall spaced from said inner wall;

sealing means forming a gas-tight cavity between said inner and outer walls;

a polyurethane foam contained within said cavity; and

said cavity also containing a free gaseous fluorinated hydrocarbon at a pressure which is maximized without exceed-

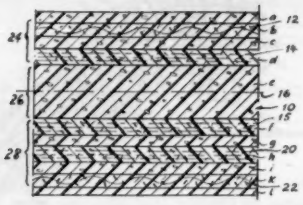
ing that at which it will condense in the operating temperature range of the structure.

4,139,025

GLASS FIBER REINFORCED PIPE

Börge I. Carlström, Nyhamnslaege, Sweden, assignor to Hobas Engineering AG, Switzerland

Filed Jun. 28, 1977, Ser. No. 811,146
Claims priority, application Switzerland, Jul. 2, 1976, 8483/76
Int. Cl.² F16L 9/12
U.S. Cl. 138—153 **11 Claims**



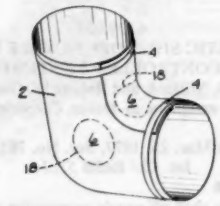
1. A glass fiber reinforced multilayer pipe of plastic, comprising a wall having a plurality of plastic layers interconnected together and having a central wall axis with a median area defined on each side of said axis, an outer area extending radially outwardly from said median area and an inner area extending radially inwardly of said median area, said plastic layers of said pipe including a plurality of glass fiber reinforced plastic layers and a plurality of plastic bonded granular filler material layers, said glass fiber reinforced layers being provided in both said inner area and said outer area and the percentage of said reinforcing glass fibers in said outer area being less than the percentage of glass fiber reinforcing in said inner area, said glass fiber reinforced layers comprising at least one layer having approximately 50 mm long circumferentially oriented fiber reinforcing pieces and at least one layer having approximately 50 mm long randomly oriented fiber pieces.

4,139,026

PIPE ELBOW FITTING COVER

Arthur E. Zack, Woodbridge, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 29, 1977, Ser. No. 837,676
Int. Cl.² F16L 57/00
U.S. Cl. 138—178 **2 Claims**



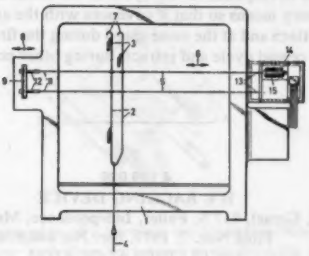
1. In an elbow cover for an insulated pipe elbow joint, wherein a single integral structure formed from a flexible, resilient, nonmetallic material is formed initially in a first elongated, open-ended, trough-like shape and is then manually folded into a second shape more generally corresponding to that of the insulated pipe elbow joint to be covered but wherein said covering requires an application of an external force to be retained in said second shape, the improvement comprising: means incorporated into said single integral structure which permits said cover to be manually folded into and retained in said second shape without the application of an external force, said means comprising depressions formed in the surface of the elbow cover and disposed such that when the elbow cover is closed around and in contact with said insulated pipe fitting said depressions appear in the inner portion of said elbow cover and are generally centered on the center diagonal of said elbow cover, and wherein each of said depressions has a maximum depth, measured from a semicircular curve having a radius equal to the outside radius of said insulated pipe elbow joint, of 3% to 10% of said radius.

4,139,027

JACQUARD MACHINE FOR A WEAVING MACHINE

Klaus Zeleny, Birnauer Strasse 11, D-775 Constance, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,420
Claims priority, application Switzerland, Sep. 2, 1976, 11127/76
Int. Cl.² D03C 3/16, 3/20
U.S. Cl. 139—59 **9 Claims**



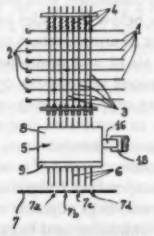
1. A Jacquard Machine for a weaving machine comprising
a plurality of lifting hooks;
a plurality of reciprocally movable presser needles for moving said lifting hooks;
a plurality of control means for controlling movement of each presser needle, each said control means including an energizable electrical coil and two electrically magnetizable rods disposed substantially coaxially within said coil, said rods being adapted to be attracted towards and repelled from one another in dependence on the field of said coil into one of two positions, whereby in one of said positions one of said rods blocks movement of a respective presser needle and in the other of said positions said one rod allows movement of a respective presser needle.

4,139,028

DEVICE FOR THE SELECTIVE ACTUATION OF THE NEEDLE SELECTION MEMBERS IN NEEDLES LOOMS

Paul Sage, Lyons, France, assignor to Verdol S.A., Caluire, France

Filed Dec. 21, 1977, Ser. No. 862,900
Int. Cl.² D03C 3/16
U.S. Cl. 139—331 **9 Claims**



1. A device for the selective actuation of the needle selection

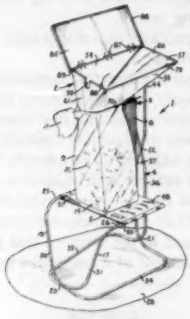
members in a needles loom using a perforated paper pattern which is advanced at a speed controlled by the operating cycle of the loom, the loom having memory means for recording information which corresponds to the perforations of the paper pattern by positioning rod members of the memory means selectively in either their neutral positions or in displaced positions as a function of this information, characterized in that the device further comprises means for applying the memory means to the advancing paper pattern during a first portion of the cycle of the loom to move the rod members to said positions; means responsive to a second portion of the cycle of the loom to lock the rod members in said selected positions; means responsive to a third portion of the cycle of the loom to remove the memory means from the paper pattern and apply the rod member to said needle selection members to actuate said needles selection members in response to the locked positions of the rod members, means responsive to a fourth portion of the cycle of the loom to unlock the rod members; and means operative in response to the cycle of the loom to reciprocate the memory means so that it advances with the advance of the paper pattern and at the same speed during the first and second portions of said cycle and retracts during other portions of said cycle.

4,139,029

ICE BAGGING DEVICE

James S. Geraci, 817 S. Fuller, Independence, Mo. 64052

Filed Nov. 7, 1977, Ser. No. 848,870
Int. Cl.[2] B65B *67/04, 67/12*
U.S. Cl. 141—98 **11 Claims**



1. A manual bagging device comprising:

(a) a hopper having an inlet end for receiving material therethrough, and an outlet end for directing said material into a commensurately shaped bag;

(b) a stand connected with said hopper and supporting the hopper above a floor surface;

(c) means operably connected with said stand for supporting said bag directly below the outlet end of said hopper, and comprising a pair of arm members connected with a lower portion of said stand and positioned below said hopper outlet end in spaced relation on opposing sides thereof, and a flexible bag support having opposing edges thereof connected with an associated one of said arm members, and extending tautly therebetween; and

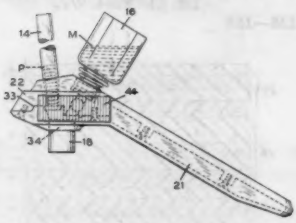
(d) bag retaining means connected to said hopper and shaped for detachably suspending a plurality of said bags thereon and positioning said bags adjacent said hopper outlet end for sequentially unfolding said bags into an open material receiving position about said hopper outlet end for individually filling each of said bags.

4,139,030

AMALGAM DISPENSING DEVICE

Manfred F. Schroeder, Point Pleasant Beach; Joseph G. Biondo, Watchung, both of N.J., and Joseph Aliotta, Staten Island, N.Y., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Jan. 17, 1977, Ser. No. 759,816
Int. Cl.[2] B65B *1/30*
U.S. Cl. 141—98 **12 Claims**



1. A dispensing and mixing device for liquid and solid ingredients comprising

a body part and a cover part secured thereto,

a first passage in said body part adapted to receive a liquid ingredient container,

a second passage in said body part adapted to receive a solid-ingredient container,

a guideway in said body part transversely located with respect to said first passage,

a channel in said cover part,

a measuring and dispensing assembly having solid-ingredient conveying means slidable in said channel and liquid-ingredient measuring and conveying means slidable in said guideway,

a discharge port in said cover part adapted to receive a receiving container in receiving portion beneath said discharge port,

said assembly being movable from a normal position to a discharge position to deliver both the solid and the liquid ingredients into said discharge port and into the associated receiving container in receiving position beneath said discharge port,

locking means adapted to be disabled by said receiving container and preventing movement of said assembly to discharge position except when said receiving container is in receiving position and disables said locking means.

4,139,031

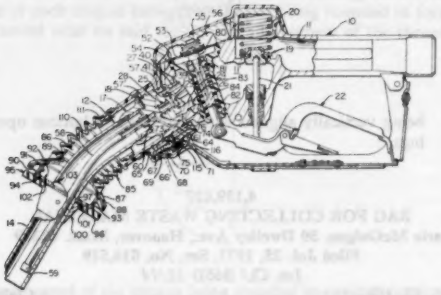
AUTOMATIC SHUT-OFF NOZZLE HAVING CONTROLLED VENTURI

Chester W. Wood, Milford, and Robert W. Guertin, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,122
Int. Cl.[2] B65B *57/14*
U.S. Cl. 141—206 **10 Claims**

1. An automatic shut-off nozzle comprising a body having an inlet, an outlet, and a first chamber between said inlet and said outlet, a first valve in said body controlling flow of liquid from said inlet to said first chamber, manual operated means controlling the operation of said first valve, a second valve in said body controlling flow of liquid from said first chamber to said outlet in accordance with the pressure differential therebetween, a seat ring in said body to support said second valve for movement relative thereto, spout means communicating with said outlet and having its free end disposed for disposition in an opening of a fill pipe of a vehicle tank or the like, a second chamber, first communicating means communicating said second chamber with the tank, one of said second valve and said seat ring having second communicating means therein to

permit liquid flow therethrough from said first chamber to said outlet irrespective of whether said second valve is open or closed, said second communicating means having an inlet communicating with said first chamber downstream of said first valve and upstream of said second valve and said seat ring and an outlet communicating with said outlet of said body downstream of said second valve and said seat ring, said inlet of said second communicating means having a fixed area, said outlet of said second communicating means having a fixed area, said second communicating means having means intermediate said inlet of said second communicating means and said



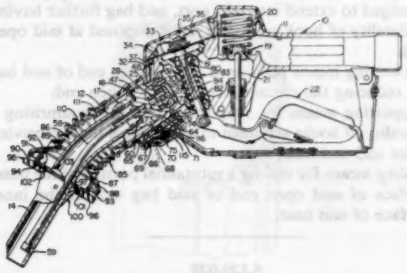
outlet of said second communicating means communicating with said second chamber to create a partial vacuum in said second chamber when liquid flows through said second communicating means and said first communicating means communicates with the tank, said second communicating means increasing the partial vacuum in said second chamber when liquid flows through said second communicating means and communication of said first communicating means with the tank is blocked, and means responsive to the increased partial vacuum in said second chamber to cause closing of said first valve.

4,139,032

LIQUID DISPENSING NOZZLE HAVING CONTROLLED SHUT-OFF MECHANISM

Charles W. Taylor, Batavia; Donald A. Lasater, Fairfield, and Steven R. Ebbesmeyer, Middletown, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,515
Int. Cl.[2] B67C *3/34*; B65B *31/06*
U.S. Cl. 141—206 **14 Claims**



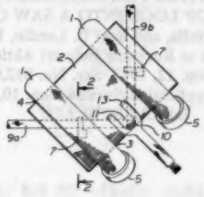
1. An automatic shut-off nozzle comprising a body having an inlet and an outlet, a valve in said body controlling flow of liquid from said inlet to said outlet, manual operated means controlling the operation of said valve, a spout communicating with said outlet and having its free end for disposition in an opening of a fill pipe of a vehicle tank or the like, release means movable from a latching position in one direction to release said manual operated means in response to at least one condition existing in the tank and acting on said manual operated means to allow closing of said valve and stoppage of liquid flow, a chamber, a diaphragm forming a wall of said chamber and having said release means connected thereto, means communicating said chamber with the tank, means to create a partial vacuum in said chamber when liquid is flowing through said body, means to increase the vacuum in said chamber when the one condition exists in the tank to cause said diaphragm to move said release means in the one direction, and means to control the reduction of the vacuum in said chamber after said release means has been moved in the one direction to release said manual operated means to prevent return of said release means to its latching position for a predetermined period of time.

4,139,033

PORTABLE TANK FOR RURAL FIRE FIGHTING

Wayne C. Brown, Box 498, Saegertown, Pa. 16433

Filed Sep. 6, 1977, Ser. No. 830,891
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—363 **2 Claims**



1. The combination of a portable water tank for fire fighting having a frame including horizontal struts forming a corner rim of said tank and a filling supply structure for filling the tank from a hose without requiring the presence of any firemen, said filling structure comprising a plate received on said corner rim, a pipe fixed to said plate and arched over said corner rim and having its outlet end discharging into the tank and its inlet end outside the tank, means for clamping said plate to said corner rim, the means for clamping said plate to said corner rim comprising hook members fixed on the underside of said plate positioned to engage opposite sides of said corner rim and having free ends extending beneath the rim and providing recesses receiving said corner rim, and a clamp on said plate having a jaw hooked over the underside of said corner rim when said corner rim is struts are received in said recesses for fastening said plate to said corner rim and blocking removal of said corner rim struts from said recesses, and a hose fitting on the inlet end of the pipe for coupling the pipe to a supply hose.

4,139,034

WAFERIZER

Frederic F. Chapman, Coquitlam, Canada, assignor to Hawker Siddeley Canada Ltd., Toronto, Canada

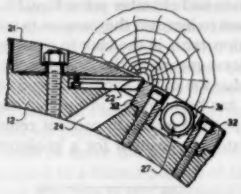
Filed Dec. 27, 1977, Ser. No. 864,214
Claims priority, application United Kingdom, Feb. 15, 1977, 6205/77
Int. Cl.[2] B27C *1/00*
U.S. Cl. 144—172 **6 Claims**

1. In a waferizer of the type having a rotatable head having a cylindrical face and a plurality of knives projecting from the said face for reducing wood stock pressed thereagainst to wafers; incising means for continuously establishing lines of severence across the face of the wood stock in advance of each knife so as to result in production of wafers of selected widths, said means comprising:

a. a cylindrical roller mounted in the head in advance of and in circumferential alignment with a selected number of circumferentially aligned knives for rotation about an axis parallel to axis of rotation of the head,

b. a plurality of circumferentially spaced apart, longitudinally extending incising blades projecting radially from the

roller, said roller being mounted so that each blade, as the roller rotates, has a maximum projection from the cylin-



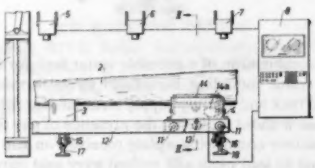
drical face of the head a distance equal to the sum total of depth of cut of the selected knives with which each roller is associated.

4,139,035

MEANS AND METHOD FOR MEASURING, ADJUSTING AND FEEDING OF LOGS INTO A SAW OR THE LIKE

Nils T. Bystedt, Jarfalla, and Karl B. Lundin, Bromma, both of Sweden, assignors to Kochums Industri Aktiebolag, Sweden

Filed Sep. 12, 1977, Ser. No. 832,622
Claims priority, application Sweden, Sep. 10, 1976, 7610080
Int. Cl.[2] B27B *1/00*
U.S. Cl. 144—312 **5 Claims**



5. A method for adjusting the position of a curved log to be fed endwise along a saw line against a planar saw, comprising the steps of:

(a) at a location laterally offset from the saw line, simultaneously electronically scanning the log dimensions and storing such information in a computer;

(b) at said location, under the control of the computer, rotating the curved log to place the curvature of the log in a plane parallel to the plane of the saw;

(c) locking the rotational position of the log;

(d) feeding the log laterally away from said location and generally into the saw line;

(e) under the control of the computer and in response to information stored therein, independently adjusting the positions of the ends of the log in a direction transverse to said saw line; and

(f) advancing said log endwise to the saw;

whereby a second log may be disposed at said location and scanned as soon as the first log has been laterally fed.

4,139,036

SCREW STARTER

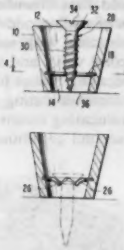
Joseph R. Regan, 102 Meadowbrook Rd., Spring Lake Heights, N.J. 07762, and Robert R. Regan, 12 Prospect Dr., North Arlington, N.J. 07032

Filed Jun. 10, 1977, Ser. No. 805,379
Int. Cl.[2] B25C *3/00*
U.S. Cl. 145—46 **20 Claims**

1. A starter device for a frictional fastener of the shank and head type, comprising, in combination:

a housing having vertically aligned top and bottom openings; and

a horizontal flexible sheet mounted inside said housing a predetermined distance above the bottom opening and having a cross-slit for receiving a frictional fastener and holding it in a vertically upright position, said cross-slit



being vertically aligned with said top and bottom openings.

4,139,037

BAG FOR COLLECTING WASTE MATERIAL

Marie McGuigan, 39 Dwelley Ave., Hanover, Mass. 02339

Filed Jul. 25, 1977, Ser. No. 818,519
Int. Cl.[2] B65D *33/14*
U.S. Cl. 150—11 **4 Claims**

1. Apparatus for collecting waste material from a cutting machine producing said waste material, said machine mounted on a base having an inner surface defining a port from which said waste material is ejected, said apparatus comprising in combination:

a. a bag having a closed end and an open end, said open end arranged to extend into said port, said bag further having a plurality of hook receiving holes disposed at said open end;

b. drawstring means positioned at said open end of said bag for reducing the circumference of said open end;

c. supporting means for supporting said bag comprising a plurality of hooks arranged to engage said hook receiving holes and said base; and

d. sealing means for sealing a substantial portion of the outer surface of said open end of said bag against the inner surface of said base.

4,139,038

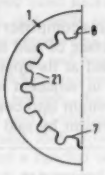
DEVICE FOR SAFEGUARDING SCREW CONNECTIONS AND OTHER MOVABLE PARTS AGAINST ACCIDENTAL LOOSENING

Ingo Häussermann, Stuttgart, Fed. Rep. of Germany, assignor to Häussermann Lamellen Dr.-Ing. Kurt Häussermann, Esslingen-Mettingen, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,815
Int. Cl.[2] F16B *39/14*
U.S. Cl. 151—30 **3 Claims**

1. For use in connection with a member provided with a threaded section and with abutment means carried by said

member and with a threaded element engaging said threaded section and to be held secured against said abutment means; a conical dish spring having an inner and an outer marginal zone, one of said marginal zones comprising in combination a plurality of radially extending tongues having free ends elastic in axial direction and lying on the conical surface of said dish spring and chamfered on both top and underside thereof, said sides of each tongue being inclined to the surface of said tongue to form an angle which is less than the flank angle formed by the sides of adjoining threads to penetrate deeply into the threaded element to increase self-binding action, the end of each tongue between said sides being rounded to form a curved nose on said tongue and the corners of the thread-



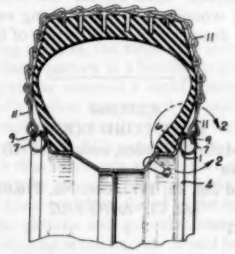
engaging end of the tongue being rounded to avoid damage to the sides of the threads, and the other one of said marginal zones forming an engaging section of said dish spring for selective engagement with said threaded element, said dish spring being placeable on said member dually secured against unintended loosening with said tongues in elastically deformed condition being progressively flattened when engaging under pressure said threaded section and being twisted to form an angle with said conical surface by engagement with the sides of the adjoining threads, while simultaneously said other marginal zone under preload engages said threaded element and presses the same against said abutment means and while said tongues also elastically interwedge with said threaded section.

4,139,039

DEVICE FOR POSITIONING ANTI-SKID CHAINS

Patrick J. Butler, 104 W. Orange Ave., South San Francisco, Calif. 94080

Filed Nov. 10, 1975, Ser. No. 630,731
Int. Cl.² B60C *27/06*
U.S. Cl. 152—233 **2 Claims**



1. A clip in combination with the end of a snow chain on a tire and a tire rim, comprising

a flat strip of springy material

one end of the strip being bent upon itself and being substantially parallel with the strip and spaced therefrom forming a hook, said bent end being inserted between the edge of the rim and the tire therein;

the other end of the strip being bent upon itself into an almost cylindrical loop and being open oppositely to said hook,

the clearance between the open end of said loop and the strip being narrower than the thickness of the end of said snow chain, and

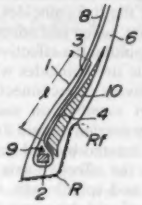
a lip on the open end of said loop flaring away from said strip and forming a tapered inlet at said clearance for insertion of said end of said snow chain.

4,139,040

PNEUMATIC TIRE FOR VEHICLES

Masao Samoto, Kunitachi; Kazumi Ueno, Tokorozawa, and Kazuhiro Tanaka, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 13, 1977, Ser. No. 787,114
Claims priority, application Japan, Apr. 18, 1976, 51-47730
Int. Cl.² B60C *15/06*
U.S. Cl. 152—362 R **7 Claims**



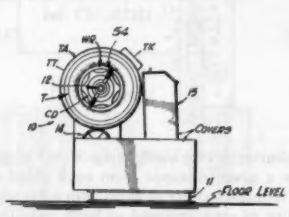
1. A pneumatic tire for vehicles comprising a toroidal-shaped main carcass body composed of at least one rubberized cord layer containing ply cords embedded therein and arranged in the radial direction of the tire, and bead portions formed in regions corresponding to ends of the main carcass body, each bead portion having a bead wire and each end of the cord layer of said main carcass body being wound around said bead wire from the inside toward the outside thereof to form a turn-up portion and a hard rubber stock positioned on the outer side of said turn-up portion and arranged entirely outside the region between said turn-up portion and said main carcass body, said turn-up portion being closely disposed adjacent to said main carcass body in the region of said bead portion which faces a rim flange when the tire is mounted on a rim and extending upwardly from substantially the top portion of said bead wire to a position beyond the top of the rim flange.

4,139,041

TIRE BUFFING MACHINE SYSTEM

Robert P. Newton, 10376 Carolwood La., Tampa, Fla. 33618

Filed Jul. 28, 1976, Ser. No. 709,544
Int. Cl.² B29H *21/08*
U.S. Cl. 157—13 **18 Claims**



1. A tire buffing machine for reducing the loaded radial runout of an inflated pneumatic tire mounted on a vehicular tire rim comprising:

a support frame;

a drive spindle rotatably mounted on said support frame for rotation about a spindle axis fixed relative to said support frame;

rotating means operatively connected to said drive spindle

for selectively rotating said drive spindle at a prescribed angular velocity; and,

a tire mounting adapter for selectively mounting the vehicular tire rim with the inflated pneumatic tire thereon on said drive spindle so that the effective rotational axis of the tire coincides with the spindle axis of said drive spindle, said adapter including a support member defining a spindle receiving passage therethrough about an adapter central axis, said spindle receiving passage sized for slidable receipt of said drive spindle therethrough so that the adapter central axis and the spindle axis coincide; locating means for positively locating the vehicular tire rim on said support member so that the effective rotational axis of the inflated pneumatic tire on the tire rim coincides with the adapter central axis; and wheel locking means fixedly and removably locking the tire rim on said support member independently of said drive spindle while said locating means is locating the vehicular rim so that the effective rotational axis of the tire coincides with the adapter central axis and so that, when said adapter is slidably received over said drive spindle, the effective rotational axis of the inflated pneumatic tire coincides with the spindle axis;

keying means positively interconnecting said drive spindle and said support member on said adapter when said adapter is slidably carried on said drive spindle so that the tire is positively rotated by said drive spindle about said spindle axis with the effective axis of rotation of the tire coinciding with said spindle axis and at said prescribed angular velocity of said drive spindle; and,

tread removal means on said support frame movable to and from engagement with the tire tread, said tread removal means capable of removing a portion of the tire tread when in engagement with the tire tread.

4,139,042

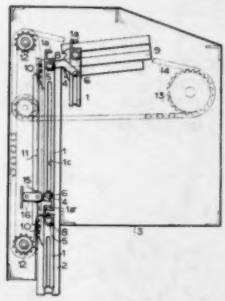
SHUTTER DEVICE

Masanori Watanabe, Yono; Yoshiaki Akima, Akikawa, and Kazuyuki Hijikata, Hino, all of Japan, assignors to Japan New Plate Hokusho Industrial Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 753,853, Dec. 13, 1976, abandoned. This application May 23, 1978, Ser. No. 908,822

Int. Cl.[2] E06B 9/26

U.S. Cl. 160—36 **10 Claims**



1. A shutter device comprising: a pair of guide rails spaced apart by a given distance from each other and arranged in parallel with each other so as to form a flat supporting surface; a plurality of slats engaged at both ends thereof with each guide rail and movable along said supporting surface; a slat enclosing means defining a slat enclosing region communicated through a conversion position located at one end of said supporting surface with said supporting surface and extending in a direction perpendicular to said supporting surface, said slat enclosing region enclosing each slat with its front surface faced toward the rear end surface of adjacent slat; a connecting means for connecting each slat to an adjacent slat such that, when each slat enters from said supporting surface into said conversion position, a slat existing in said conversion region is deflected into said slat enclosing region and that, when each slat is delivered from said conversion region, the slat existing in the slat enclosing region is pulled out into said conversion region: a conversion means for effecting the conversion of each slat at said conversion position; and a driving means for selectively accomplishing either one of the movement of causing each slat to be entered into said conversion region and the movement of causing a slat existing in said conversion region to be removed wherein:

(a) said connecting means is comprised of a lever, one end of which is pivotably attached to the upper end of said slat and another end of which is slidably fitted to an elongated groove formed on an adjacent slat and the central portion of which projects from said supporting surface to form an engaging surface;

(b) said conversion means comprises a push means for engaging the engaging surface of said lever; and

(c) each slat is provided at its upper and lower ends with engaging members in adjacent engagement when two adjacent slats are brought into contact with each other as a result of slat movement by said driving means.

4,139,043

WINDOW SHADE SLAT

John D. Donofrio, Ogdensburg, N.Y., assignor to Joanna Western Mills Company, Chicago, Ill.

Filed Mar. 10, 1977, Ser. No. 776,298

Int. Cl.[2] E06B 9/00

U.S. Cl. 160—236 **5 Claims**

1. An improved window shade of the type having in combination a sheet of shade material with a hem pocket along the lower edge adapted for receiving therein a shade slat and a shade slat inserted within said hem pocket, wherein the improvement comprising a window shade slat which comprises a permanently flattened thick-walled, multi-layered, convolutely or spirally wound paper tube having substantial resistance to bending distortion in the direction of its greatest flattened thickness.

4,139,044

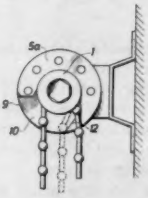
BALL CORD LOCK

Hans R. Brolin, Mullsjö, Sweden, assignor to AB Perma System, Mullsjö, Sweden

Filed Jul. 15, 1977, Ser. No. 816,011

Int. Cl.[2] A47G 5/02

U.S. Cl. 160—321 **1 Claim**



1. Ball cord lock intended to be used for roller blinds and

comprising a cord pulley having an axially extending stub axle for receiving and retaining one end of a roller blind rod, an endless ball cord arranged around said cord pulley and in engagement therewith and which during operation winds-up and unwinds respectively, a blind attached to said roller blind rod, a lock housing formed by two complementary housing halves which housing constitutes journal for and encloses said cord pulley, the outer peripheral surface of said lock housing being spaced from the outer peripheral surface of said cord pulley and including an aperture through which said ball cord extends from said cord pulley, said aperture comprising a U-shaped cord locking portion which is of such a dimension as to admit the adjacent cord portion of said ball cord and prevent admittance of the balls of said ball cord, the opening to said U-shaped cord locking portion facing the portion of said endless ball cord opposite said adjacent cord portion, the edge surfaces of said U-shaped cord locking portion constituting a slip plane upon which said balls sequentially slide, said slip plane being angularly oriented away from said outer peripheral surface of said lock housing and extending from said opening of said U-shaped cord locking portion towards the bite of said U-shaped cord locking portion, the height of said plane and therefore the height of said U-shaped portion, relative to said peripheral surface of said lock housing, increases from said opening to said bite, and a bracket which is connected to said lock housing and which is intended to be mounted at a window.

4,139,045

CASTING METHOD AND APPARATUS

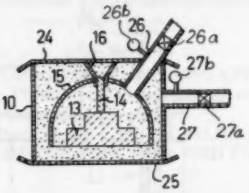
Gerhard Vitt, Bergisch Gladbach-Schildgen, Fed. Rep. of Germany, assignor to VKI-Rheinhold & Mahla AG, Fed. Rep. of Germany

Filed May 18, 1977, Ser. No. 798,095

Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622552

Int. Cl.² B22C *9/04, 15/28*

U.S. Cl. 164—34 **16 Claims**



1. In a casting method, the steps of at least partially embedding a foam-plastic pattern in a binderless granular material to form in the granular material a mold space occupied by and having its configuration determined by said pattern, said embedding step including initially situating the foam-plastic pattern within a mold box, filling the mold box with the granular material which thus surrounds at least part of the pattern, then situating around the granular material which engages the pattern a hollow hood which is placed in the mold box in a position where the pattern and granular material engaging the same become situated in the interior of said hollow hood, a part of the interior of the mold box being left without granular material as a result of the introduction of the hood into the mold box, and then filling the latter part of the interior of the mold box with additional granular material, pouring into said space a molten material which reacts with said foam-plastic pattern to replace the latter in said space while the pattern disappears and while a gas is generated by contact between the molten material and the foam-plastic pattern, and creating from the latter generated gas in the granular material which defines at least part of said mold space an elevated pressure greater than atmospheric pressure said hood receiving at least part of the generated gas for creating said elevated pressure, and in the presence of said elevated pressure the molten material fills said space so that the molding of the molten material into the configuration of said space takes place at said elevated pressure and regulating the magnitude of said elevated pressure.

4,139,046

TURBINE WHEEL PATTERN AND METHOD OF MAKING SAME

Virgil V. Stanciu, Rocky River, Ohio, assignor to Tempcraft Tool & Mold, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 679,220, Apr. 27, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,966

Int. Cl.² B22C *7/02*

U.S. Cl. 164—45 **5 Claims**

1. The method of forming an investment casting finished wheel pattern of suitable pattern material for a turbine wheel, having one continuous and regular series of blades extending around its periphery with a uniform pitch between blades; in which all said blades are bent in one circumferential direction and adjacent blades overlap each other in a circumferential direction, comprising separately forming two pattern wheel portions, each portion of the same diameter as said finished wheel pattern and each of said pattern wheel portions having every other blade of said continuous and regular series of blades around its periphery with a uniform pitch between blades, which is exactly twice said first named pitch, in which adjacent blades do not overlap each other; there being complementary means on said two pattern wheel portions indicating a mutual registering position between them whereby to exactly arrange said blades of said two pattern wheel portions with the blades of one pattern wheel portion between the blades of the other pattern wheel portion in said finished wheel pattern having one continuous and regular series of said blades around its periphery and all blades bent in the same direction around said periphery in said first named uniform pitch; so arranging said two pattern wheel portions and securing said two pattern wheel portions together and fixed in said mutual position.

4,139,047

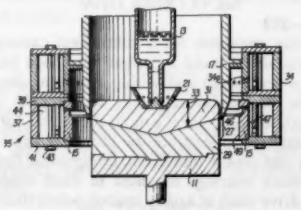
INDUCTOR FOR ELECTROMAGNETIC CASTING

Robert M. Parrish, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jul. 18, 1977, Ser. No. 816,466

Int. Cl.² B22D *27/02*

U.S. Cl. 164—147 **16 Claims**



1. A loop-shaped coolant box for an electromagnetic continuous casting system for transporting coolant around, and spraying coolant onto an ingot being cast, said coolant box including an inner wall formed of an electromagnetic solid inductor, said solid inductor having passages therethrough for

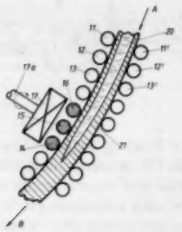
allowing coolant in said coolant box to pass from the interior of the coolant box through said solid inductor to the exterior surface of said inductor and be sprayed onto said ingot, said solid inductor further including an integral portion thereof forming a continuous deflector surface on the exterior surface of said inductor for engaging and deflecting coolant exiting from said passages.

4,139,048

MAGNETIC STIRRER FOR CONTINUOUSLY CASTING METAL

Conny Andersson, Viken, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Apr. 26, 1977, Ser. No. 790,947
Claims priority, application Sweden, May 21, 1976, 7605770
Int. Cl.[2] B22D *11/12*
U.S. Cl. 164—147 **1 Claim**



1. Continuous metal casting equipment comprising skin support rollers for supporting the opposite sides of a continuously traveling magnetic metal strand forming a solidified skin internally containing molten metal, said support rollers forming on each of said sides an uninterrupted series of substantially uniform and closely interspaced support rollers, the insides of said series contacting said skin so as to substantially continuously support the skin against breaking and releasing its contained molten metal, and a stationary inductive stirrer for inductively stirring the molten metal inside of said skin, said stirrer being positioned on the outside of one of said series with some of the rollers of that series interposed between the stirrer and said strand, and made of non-magnetic material so as to form a magnetically permeable window for the stirrer, the balance of said rollers being made of magnetic metal.

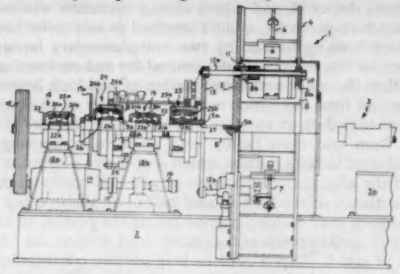
4,139,049

POSITIONING APPARATUS FOR A CENTRIFUGAL CASTING MACHINE AND MEANS FOR POSITIONING COMPONENTS THEREOF FOR A MOLD STRIPPING OPERATION

Frederick W. Baumann, Scotia, and Bernard C. Kaczkowski, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 11, 1977, Ser. No. 795,757
Int. Cl.[2] B22D *13/00*
U.S. Cl. 164—292 **10 Claims**

1. Positioning apparatus for a centrifugal casting machine having an articulated mold mounted on a face plate that is rotatable on a drive shaft and within a housing that supports pulling means for moving segments of the mold in a radial direction to alternatively form a mold receptacle for receiving castable material or to separate the mold segments to enable removal of a cast article therefrom, comprising, first and second pillow block bearings mounted in fixed relationship to support said drive shaft at axially spaced points thereon, a first thrust bearing mounted on said drive shaft between said pillow block bearings, a second thrust bearing mounted on said drive shaft between the second pillow block bearing and said face plate, said bearings enabling the drive shaft to be tilted, a plurality of lock pins reciprocally mounted on said housing at spaced points around the face plate, a plurality of positioning members mounted at arcuately spaced points on the face plate to each receive, respectively, one of said lock pins, and means for selectively reciprocating said lock pins in a radial direction



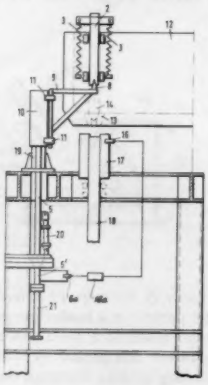
either to move them into positioning engagement with said positioning members aligned to receive the lock pins or to retract the lock pins from said positioning members to free the face plate and mold for rotation.

4,139,050

CONTROL OF DISCHARGE OUTLET OF A CASTING VESSEL

Josef Glaser, Dusseldorf; Karl H. Koch, and Johannes Kurth, both of Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 16, 1977, Ser. No. 825,028
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637548
Int. Cl.[2] B22D *11/10*
U.S. Cl. 164—437 **9 Claims**



1. Apparatus for the control of a plug for the casting outlet of a removable tundish cooperating with a mold for continuous casting the mold being positioned in a casting stand, comprising:

a transverse arm suspending the plug;

a first, vertically extending and vertically movable rod, said arm being mounted on said first rod so that the plug moves up or down as the first rod moves up or down;

spring means for biasing the first rod tending to move the first rod and the plug down into closing position of the casting outlet of the tundish;

said arm, first rod and spring means being mounted to the tundish and movable and displaceable therewith;

hydraulic drive means connected to the casting stand and operating a piston rod in up or down direction;

control means on the stand for controlling the hydraulic drive means in dependence upon casting by the mold; and

connecting means including a plug connection for disconnectably connecting the piston rod to the first rod on which the arm is mounted, the connection and disconnection resulting, respectively, from up and down movement of the piston rod.

4,139,051

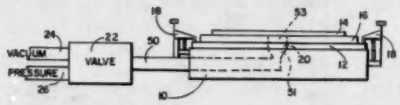
METHOD AND APPARATUS FOR THERMALLY STABILIZING WORKPIECES

Addison B. Jones, La Mirada, and William R. Fewer, West Covina, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 7, 1976, Ser. No. 721,121

Int. Cl.[2] F28F *13/18*

U.S. Cl. 165—1 **12 Claims**



7. A process for heat removal from parts during processing comprising the steps of:

mounting a heat conductive member having an aperture on a supporting fixture,

coating the top surface of said heat conductive member with a dry, chemically inert, polymer film,

positioning a part over the top surface of said coated heat conductive member,

applying a vacuum through said aperture of said conductive member for bringing said part into intimate contact with said heat conductive member, and

applying a positive pressure to said part through said aperture in said heat conductive member for releasing said part from contact with said heat conductive member.

4,139,052

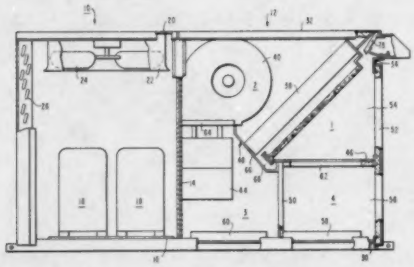
ROOF TOP AIR CONDITIONING UNIT

Robert S. Lackey, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 853,989

Int. Cl.[2] F28F *7/00*; F25B *29/00*; F25D *23/12*

U.S. Cl. 165—59 **9 Claims**



1. An air conditioning unit of the type adapted for a roof top or slab installation and for receiving and returning indoor air either horizontally or vertically, comprising:

a cabinet having an intermediate vertical partition separating the interior thereof into an outdoor air flow section containing refrigerant compressor means, a first refrigerant coil, outdoor air blower means, and an indoor air flow section containing a second refrigerant coil and blower means for circulating the air to and from the served space, said cabinet including top, end, side and base walls for said indoor section, said side walls including removable panel means at each of the side walls of said indoor section;

the interior space of said indoor section being viewable from a side as including four generally quadrantal spaces defined as follows, the first quadrantal space being located in an upper corner and bounded exteriorly by the end and top wall, the second quadrantal space being located in an upper corner and bounded exteriorly by the top wall and the intermediate vertical partition, the third quadrantal space being located in a lower corner and bounded exteriorly by the intermediate vertical partition and the bottom wall, and the fourth quadrantal space being located in a lower corner and bounded exteriorly by the bottom wall and the end wall;

said end wall having two vertically separated air flow openings therein, the first opening into said first quadrantal space and the second opening into said fourth quadrantal space, said bottom wall having two additional air flow openings therein horizontally separated from each other, defined as the third opening into the fourth quadrantal space and the fourth opening into the third quadrantal space;

interior wall means having generally horizontally extending portion including one portion separating the first and fourth quadrantal space and another portion separating the second and third quadrantal space, the one portion including a fifth air flow opening generally overlying said third air flow opening in the bottom wall;

said second refrigerant coil being located mainly in said first quadrant in an inclined dispostion with its upstream face presented to both said first air flow opening in said end wall and said fifth air flow opening in said one portion of said interior wall means;

said indoor air blower means being located in said second quadrant on the downstream side of said second refrigerant coil and being oriented to discharge air through sixth air flow opening means in said another portion of said interior wall means and down into said third quadrantal space;

a detachable panel having a first position separating said third and fourth quadrantal spaces and a second, alternate position separating said first and fourth quadrantal spaces and covering said fifth air flow opening;

removable end wall panel means adapted to cover said first and second air flow openings in said end wall in a first position and to cover said third and fourth air flow openings in said base wall in a second, alternate position;

whereby said detachable panel and said end wall panel means in first positions establish a vertical mode air flow path in which return air from the served space passes in sequence through said fourth, first, second, and third quadrantal spaces, and said detachable panel and said end wall panel means in their second, alternate positions establish a horizontal air flow mode in which air passes in sequence through said first, second, third and fourth quadrantal spaces.

4,139,053

RADIATOR, ESPECIALLY FOR MOTOR VEHICLES

Hans Schaal, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 23, 1976, Ser. No. 744,298

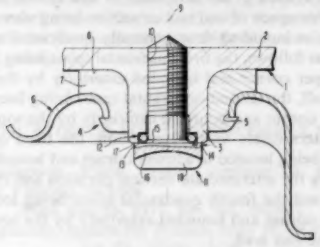
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553254

Int. Cl.[2] F28F *9/10*

U.S. Cl. 165—71 **12 Claims**

1. A radiator comprising a water box having a bottom wall with a bearing support projection means for providing a vertical bearing support for said water box, said support projection means extending outwardly from said bottom wall for extending through a collar means retained within a transversely

extending frame member, cooling liquid drainage means, said drainage means extending through said support projection



means, and a closure means for sealing said drainage means at a side of said collar means opposite from said bottom means.

4,139,054

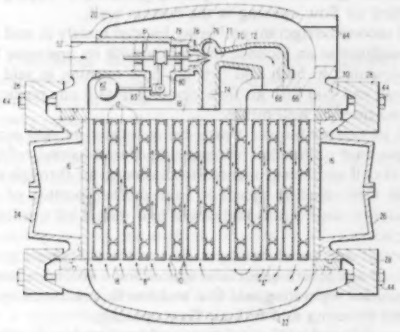
PLATE-FIN HEAT EXCHANGER

J. Hilbert Anderson, York, Pa., assignor to Sea Solar Power, York, Pa.

Filed Oct. 28, 1977, Ser. No. 846,318

Int. Cl.[2] F28F *3/10*

U.S. Cl. 165—76 **20 Claims**



1. A heat exchanger comprising a plurality of plates arranged in pairs in vertical planes and in spaced parallel relation to one another between a plurality of pressure plates, each pair of plates defining a passage therebetween and each pair of plates defining a passageway between adjacent pairs of plates, gasket flanges secured to the edges of said plates and supported on said pressure plates, cover members for the top, bottom and sides of said plates, clamping plates for engaging said side and top cover members and said side and bottom cover members to force said top and bottom cover members against said gasket flanges contemporaneous with compressing the side covers against said pressure plates to force said plate members towards one another and retain said heat exchanger in an assembled condition.

4,139,055

SOLAR HEATING (COOLING)

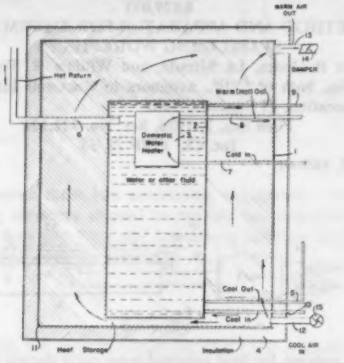
Harry E. Thomason, and Harry J. L. Thomason, Jr., both of 6802 Walker Mill Rd., SE., Washington, D.C. 20027

Filed Jun. 17, 1976, Ser. No. 696,916

Int. Cl.[2] F28D *21/00*

U.S. Cl. 165—96 **4 Claims**

1. Heat or cold storage apparatus comprising a first outer container, a second container in said first container, a third tank-like container in said second container, insulation means to reduce heat or cold transfer into or out from said first outer container, and heat (cold) storage material in said first container substantially surrounding said second container, said heat (cold) storage material being in thermal communication with said second container to permit heat to flow from said second container to said heat (cold) storage material or from said heat (cold) storage material to said second container, inlet conduit connection means for said first container to admit fluid to be warmed and outlet conduit connection means for said first container to allow for exit of warmed fluid, said heat (cold



storage material having passages therethrough allowing for circulation of fluid to be heated or cooled, means to retard or prevent flow of fluid through said first container when desired, conduit means connected to said third container to introduce liquid to be heated or cooled and to provide for exit of such liquid, and conduit means connected to said second container to provide for introduction of liquid and exit of liquid for storing heat or cold.

4,139,056

METHOD OF AND SYSTEM FOR STORING HEAT

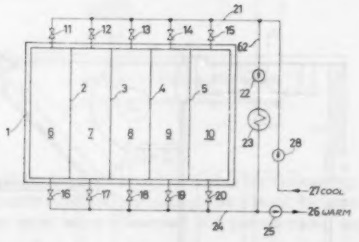
Günter Schöll, Via Orselina, Locarno-Muralto, Switzerland (CH-660)

Filed Aug. 14, 1975, Ser. No. 604,782

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1974, 2439028

Int. Cl.[2] F28D *13/00*

U.S. Cl. 165—104 S **1 Claim**



1. A system for storing heat, said system comprising:

a large reservoir adapted to hold a body of water for storage of heat in one season and release at another season;

an insulating cover over said water in said reservoir, said cover preventing the loss of heat from said water in said reservoir at the top of said body of water;

a plurality of upright partitions in said reservoir subdividing same into a plurality of separate compartments;

means opening into the lower region of each compartment for introducing relatively cool water into and withdrawing same from said compartment;

conduit means opening into the upper region of each of said compartments for introducing relatively warm water into and withdrawing same from said compartments;

a heat exchanger in said conduit means externally of said reservoir for introducing warm water into said compartments;

a cool-water conduit and a plurality of valves each connected to a respective compartment and to said means for introducing and for withdrawing said cool water; and

a warm-water conduit and a plurality of valves each connected to a respective compartment and constituting said conduit means, the cold and warm water conduits opening into the respective compartments through the respective valves on opposite sides of said reservoir.

4,139,057

METHOD AND DEVICE FOR MEASURING MOISTURE IN ELECTRIC MACHINES

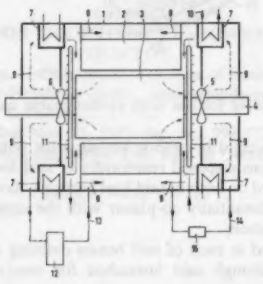
Jürgen Klaar, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Aug. 8, 1977, Ser. No. 822,798

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1976, 2635829

Int. Cl.² H02K *9/00*

U.S. Cl. 165—107 R **7 Claims**



1. Device for preventing moisture precipitation at sensitive machine parts and for measuring moisture to determine leaks of moisture within the housing of an electric machine having a winding cooled with water and a gas stream cooled by a heat exchanger circulated within the housing, comprising a heat sink maintained at a temperature below any machine part within the housing, connecting means for passing the gas circulating within the housing in contact with the heat sink to bring the gas to the lower temperature of the heat sink and to precipitate moisture from the gas above the dew point of the gas on contact with the heat sink, circulating means for flowing the gas from the colder heat sink with a dew point at the lower temperture of the heat sink in contact with the sensitive machine parts within the housing at a temperature above the temperature of the heat sink thereby preventing precipitation of moisture from the gas on the sensitive machine parts, said circulating means also continuing recirculation from the heat sink to the machine parts within the housing to create steady moisture conditions in the circulating gas, moisture measuring means for measuring moisture changes in the circulating gas at a point spaced from the heat sink after the steady moisture conditions have been reached to determine fluctuations in moisture in the gas indicating leakage of moisture into the housing.

4,139,058

HYDRAULIC STOP AND ORIENTING TOOL FOR WELL SYSTEM INSTALLATION

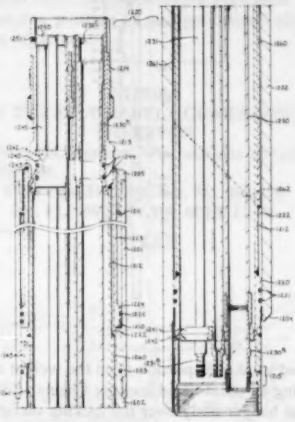
John C. Gano, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Division of Ser. No. 708,843, Jul. 26, 1976, Pat. No. 4,077,472.

This application Nov. 21, 1977, Ser. No. 853,106

Int. Cl.² E21B *23/00, 43/01*

U.S. Cl. 166—85 **2 Claims**



2. A hydraulic stop and orienting tool for use in a handling string for running and pulling well tools to provide support for said handling string and well tools connected therewith at a flange assembly mounted over a well bore said stop and orienting tool comprising: a tubular outer body section with a lower end orienting and supporting no-go surface; an inner body section telescopically coupled with said outer body section; co-engageable stop shoulder means connected with said outer body section and said inner body section and spaced apart to permit limited telescopic action of said inner body section into said outer body section; spaced seal means between said body sections defining an annular chamber between said body sections and a downwardly facing annular surface on said inner body section; means providing a control fluid flow passage into said annular space between said body sections and between said spaced seal means; and orienting and locking means between said body sections for rotating and locking said inner section relative to said outer section as said inner section is telescoped into said outer section.

4,139,059

WELL CASING HANGER ASSEMBLY

James T. Carmichael, Shreveport, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 12, 1977, Ser. No. 859,416

Int. Cl.² E21B *43/10*

U.S. Cl. 166—208 **8 Claims**

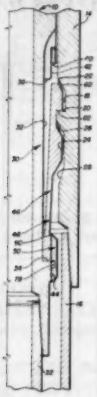
1. A hanger assembly for suspending an inner pipe string within and from an outer casing comprising:

an elongated tubular hanger body with upper and lower ends, the upper end adapted for releasable connection to a well tool and the lower end adapted for connection to an inner pipe string;

said hanger body having a recessed intermediate portion with external screw threads subjacent said recessed portion and an enlarged diameter locking surface superjacent said recessed portion; and

a locking assembly around the hanger body received within the recessed intermediate portion having a lower base and a plurality of latching fingers extending upwardly from the lower base with the free ends thereof being self-urged

outwardly, said locking assembly including a separate connecting ring having internal screw threads in threaded engagement with the hanger body and in threaded engagement with said lower base to secure the latching fingers in position on the hanger body, said connecting ring having a weakened portion whereby said ring fails



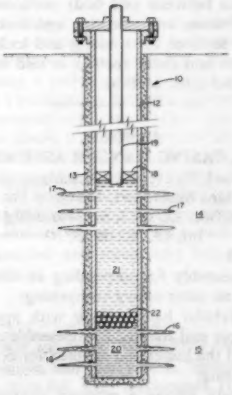
about said weakened portion from the weight of the inner pipe string to permit said locking fingers to slide axially along the hanger body over the locking surface whereby the locking surface holds the upper ends of the fingers in an expanded condition for preventing inner movement of the upper ends of said fingers.

4,139,060

SELECTIVE WELLBORE ISOLATION USING BUOYANT BALL SEALERS

Thomas W. Muecke; Claude E. Cooke, Jr., and Clay Gruesbeck, Jr., all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Nov. 14, 1977, Ser. No. 850,879
Int. Cl.[2] E21B *33/13, 43/26, 43/27*
U.S. Cl. 166—281 **16 Claims**



1. A method for treating a formation penetrated by a well provided with casing having a plurality of perforations wherein ball sealers are used for restricting flow through lower perforations while leaving upper perforations open to fluid flow comprising:

(a) introducing into the well ball sealers having a size sufficient to restrict fluid flow through said lower perforations;

(b) introducing into the well a first fluid having a density greater than the density of the ball sealers in an amount such that the upper level of the fluid is between said upper perforations and said lower perforations;

(c) introducing into the well a second fluid having a density less than the ball sealers density; and

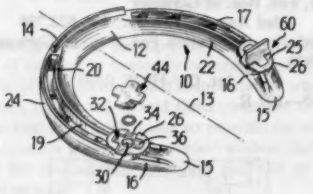
(d) after said ball sealers are below said upper perforations, injecting a treating fluid into the casing to cause a flow of said second fluid through said lower perforations to carry said ball sealers down the casing to seat on said lower perforations and to cause a flow of fluid through the upper perforations.

4,139,061

CONVERTIBLE RACING PLATE WITH EXCHANGEABLE CALKS

W. Martin Vogel, Jr., Mendham, N.J., assignor to Kwik-Kalk Corporation, Montclair, N.J.

Continuation-in-part of Ser. No. 597,670, Jul. 21, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,449
Int. Cl.[2] A01L *7/04*
U.S. Cl. 168—41 **11 Claims**



1. A racing plate for use with exchangeable calks, comprising:

a thin, lightweight horseshoe having a toe portion and two heel portions disposed rearwardly of said toe portion;

a boss, formed on both of said heel portions, having an upper surface substantially co-planar with the upper surface of said horseshoe;

means formed in each of said bosses defining a mortise extending through said horseshoe for receiving selected calks; and

means formed on each of said bosses, adjacent said mortise, defining a shoulder extending generally normal to the upper surface of said boss for fixing the angular orientation of a calk in said shoe, said shoulder defining means including a shallow, upwardly opening cruciform-shaped channel formed in said boss, said channel being defined by two pairs of vertically extending, horizontally facing walls, the two pairs of walls being disposed at right angles to each other.

4,139,062

TELESCOPIC AUTOMATIC FIRE EXTINGUISHER

John J. Rago, 31 Avenue Charles de Gaulle, 95160 Montmorency, France

Filed Oct. 18, 1976, Ser. No. 733,274
Claims priority, application France, Oct. 27, 1975, 75 32763
Int. Cl.[2] A62C *37/12*
U.S. Cl. 169—37 **8 Claims**

1. Automatic telescopic fire extinguisher comprising:

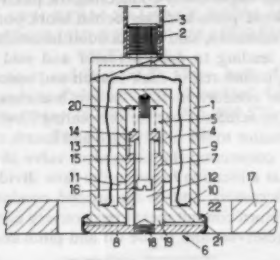
a water distributing head adapted to be connected to a stationary position to a water supply duct,

a movable member slidably mounted on said head for movement between a first position in which it prevents distribution of water by said head and a second position in which

it permits said distribution and deflects water leaving said head,

single means for applying pressure urging said movable member to its second position, and

temperature responsive means for retaining said movable member in its first position until, but only until, said temperature-responsive means is subjected to as least a predetermined temperature, and in which said head comprises a



first cylindrical portion, and said movable member comprises a coaxial second cylindrical portion telescopically slidable with respect to said first cylindrical portion, both cylindrical portions have transverse apertures which are blocked when said movable member is in said first position, said apertures comprising valve means for controlling the entire flow of water through the head, each of said apertures of said first cylindrical portion being sealed by said second cylindrical portion, in said first position.

4,139,063

CONTROL FOR THE HYDRAULIC POWER LIFT OF A TRACTOR

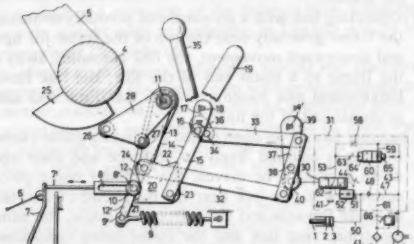
Heribert Adams, Hoffnungstahl, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,273

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623097

Int. Cl.[2] A01B *63/112*

U.S. Cl. 172—9 **3 Claims**



1. A control for the hydraulic power lift of a tractor and a working implement associated therewith, particularly of a tractor used in agriculture, which comprises in combination: a mechanical control mechanism associated with said tractor and including first pick-up means for indicating the working resistance of said working implement and having a slotted hole portion therewith, second pick-up means for indicating the position of said working implement, third pick-up means for indicating the desired value of the position of said working implement, first spring means, and linkage means which includes rod means connected to the slotted hole portion of said first pick-up means for working resistance; and a hydraulic control system associated with said tractor and including a pre-control slide valve operatively connected to said linkage means and movable into "lift", "neutral", and "lower" positions for respectively causing said working implement to move into a lifted, neutral, and lowered position, said pre-control slide valve including a second spring means which continuously urges said pre-control slide valve into said lower position, and which, while being weaker than said first spring means, acts counter to the latter, said hydraulic control system also including piston means operatively connected to said precontrol slide valve and said working implement for translating the respective position of said pre-control slide valve to said working implement.

4,139,064

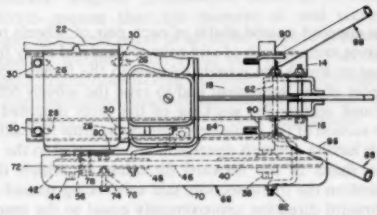
ROTARY TILLER AND BELT GUARD MOUNTING THEREFOR

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Feb. 21, 1978, Ser. No. 881,408

Int. Cl.[2] B62D *51/04*; A01B *33/04*

U.S. Cl. 172—43 **2 Claims**



1. In a walk-behind rotary tiller including an engine including an output shaft having a first pulley mounted thereon; a counter shaft arranged parallel to the output shaft and having a second pulley mounted thereon, a generally horizontal, fore-and-aft extending main frame supporting said engine on a forward portion thereof and said counter shaft on a rearward portion thereof with the engine being releasably mounted for movement toward and away from the countershaft to adjust the center distance between the first and second pulleys, a drive belt trained about the first and second pulleys, a belt guard including a vertical wall located transversely outwardly of the first and second pulleys and the belt and a flange extending inwardly from the vertical wall and extending arcuately respectively forwardly of the first pulley and rearwardly of the second pulley and fore-and-aft above the belt, and a first fastener for vertically pivotally mounting a ground engaging member to the frame at a location below the counter shaft, an improved mounting for supporting the belt guard on the frame, comprising: a connection means pivotally connecting the forward end of the guard to the engine; and said first fastener being in the form of a bent rod having first and second parallel, transverse, axially misaligned end sections with the first end section being pivotally received in the ground engaging member and the frame and with the second end section being pivotally received in the belt guard whereby the belt guard will pivot at said connection means when the engine is adjusted toward or away from the counter shaft.

4,139,065

TRANSPORT WHEEL ASSEMBLY FOR IMPLEMENTS

Howard L. Lewison, Hutchinson, Minn., assignor to Dynamics Corporation of America, Greenwich, Conn.

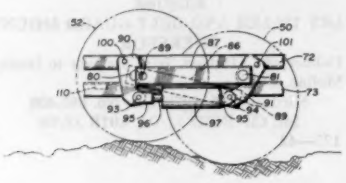
Filed Sep. 28, 1977, Ser. No. 837,307

Int. Cl.[2] A01B *63/22*

U.S. Cl. 172—400 **12 Claims**

1. A transport wheel assembly for an agricultural implement

having a frame section extending transversely to the forward direction of travel of the implement with ground working tools connected to the frame section and distributed along the extent of the same, comprising: at least two pairs of ground support wheels; a pair of pivot arms for each pair of wheels; each wheel of said pair of wheels being journaled on an axle mounted on one end of a pivot arm respectively; a pair of shafts for each pair of wheels journaled in the frame section of the implement and mounting the other ends of said pivot arms respectively, the shafts for said pivot arms of each pair of wheels being mounted in the frame section so as to be spaced apart along the extent of the frame section and apart in the frame section in the forward direction of travel of the implement; and actuator



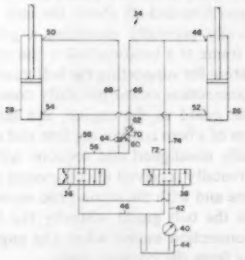
means coupled to said shafts of each pair of wheels to rotate said pivot arms of each of said pairs toward and away from one another to lower the wheels relative to the frame section for transport of the implement and to raise the wheels relative to the frame section for working of the tools mounted on the frame section of the implement, said pivot arms for each pair of wheels having a length dimension at least equal to the spacing of the shafts in the forward direction on which they are mounted on the frame section, said axles being spaced apart in the forward direction approximately equal to the spacing between the shafts mounting the same for the raised position of the wheels and less than the spacing between the shafts on which they are mounted for the lowered position of the wheels.

4,139,066

HYDRAULIC TILT AND PITCH CONTROL FOR DOZER BLADE

Thomas O. Goodney, Platteville, Wis.; Donald O. Johannsen, Sherrill, and John T. Kubesheski, Dubuque, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 8, 1977, Ser. No. 804,788
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—803 **4 Claims**



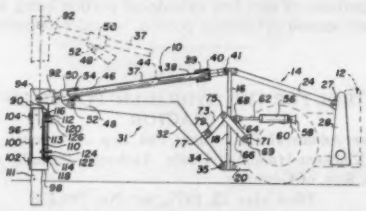
3. In a hydraulic system for controlling tilt and pitch movements of a dozer blade and including first and second extensible and retractable hydraulic actuators connected in parrallel with each other and each having first and second work ports, a source of fluid under pressure, a reservoir, valving connected to the first and second work ports of each of the first and second actuators and to the source and reservoir and being selectively operable for establishing a neutral condition wherein fluid is prevented from passing to or from the actuators, a pitch effecting condition wherein the source and reservoir are connected to the actuators such as to effect either concurrent equal extension or retraction of the actuators and a tilt effecting condition wherein the source and reservoir are connected to the actuators such as to effect extension or retraction of one actuator relative to the other, an improved valving arrangement comprising: separately operable tilt and pitch control valves and a flow divider means; first and second conduit means respectively connecting the pitch control valve to the first work ports and the second work ports of the first and second actuators; said first conduit means having a separate branch leading to each actuator and said flow divider means being connected in each branch and operative for permitting equal concurrent flow in the branches either to or away from the actuators and for preventing flow therethrough from one actuator to the other; third and fourth conduit means respectively connecting the tilt control valve to the first conduit means, at a location between the flow divider means and one of the actuators, and to the second conduit means; and supply and return conduit means respectively connected to the source and reservoir and to the tilt and pitch control valves.

4,139,067

POST DRIVING ATTACHMENT FOR TRACTOR

Frederick W. Craig, 7460-148th St., Surrey, British Columbia, Canada (V3S 3E7)

Filed Oct. 4, 1977, Ser. No. 839,236
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—100 **5 Claims**



1. A post driver adapted for attachment to a tractor, comprising:

a frame with a top end and a bottom end and attachable to the tractor;

a connecting link with a proximal end pivotally connected to the frame generally near the top of the frame for upward and downward movement, the link extending away from the frame to a distal end of the link, the link having a longitudinal axis passing through the distal end and the proximal end of the link;

a hammer having an open ended depending guide extending therefrom adapted freely to embrace and slide up and down a post to be driven, the hammer being pivotally connected to the link near the distal end of the link for pivoting towards and away from the frame, the hammer, the connecting link and the frame being connected for pivoting of the hammer about the longitudinal axis of the link and the hammer and guide having a center of gravity below the distal end of the link so that gravitational forces align the hammer and guide, the hammer can strike the top of the post squarely and the guide can hold the post vertically; and,

an articulated arm pivotally connected to the frame generally near the bottom of the frame for upward and downward movement, the arm extending away from the frame to a distal end of the arm, the arm and the frame being connected by at least one fluid cylinder for moving the arm upwardly and downwardly, the distal end of the arm being slidably connected to the link for movement generally along the longitudinal axis of the link, permitting the hammer and the guide to move outwardly from the distal

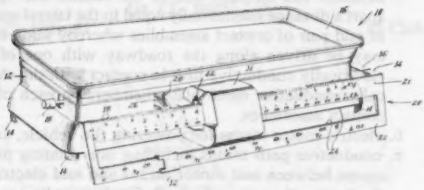
end of the arm when the arm moves upwardly and towards the distal end of the arm when the arm moves downwardly, so that the hammer and the guide remain generally in vertical alignment with the post to be driven during the upward and downward movement of the arm.

4,139,068

METHOD AND APPARATUS FOR CONVERSION OF AN UNEVEN ARM BEAM BALANCE FROM METRIC WEIGHT TO ENGLISH WEIGHT MEASUREMENT AND VICE VERSA

Carl G. Sontheimer, and Richard D. Clare, both of Greenwich, Conn., assignors to Cuisinarts, Inc., Stamford, Conn.

Filed May 25, 1977, Ser. No. 800,570
Int. Cl.[2] G01G *1/26*
U.S. Cl. 177—1 **28 Claims**



1. In an unequal arm beam balance having a receptacle onto which the object to be weighed is placed and having a weighing arm which swings up and down about a fulcrum during a weighing operation, this weighing arm including a main beam along which an original main weight can be moved into discrete predetermined positions as defined by a sequence of notches, said original main weight being positioned along said main beam and having a locator element engageable in said discrete notches for selectively locating said main weight at any one of said predetermined positions, said main weight being intended for making metric weight unit measurements and having a reading index for showing the user which of said main metric graduations corresponds with the predetermined position of said main weight, and also including a parallel secondary beam along which a secondary weight can be slid into any desired position for making measurements of fractional values of weight intermediate the values of weight corresponding to said main metric graduations,

the method of conversion of the balance from weighing in metric weight units to weighing in English weight units comprising the steps of:

providing a main sequence of metric weight unit graduations extending along the main beam with predetermined main metric graduations corresponding to respective predetermined discrete positions, said sequence of main metric graduations including at least one graduation corresponding to 400 N grams (where "N" is a positive integer lying in the range up to 1,000,

providing a secondary sequence of metric weight unit graduations extending along the secondary beam, said secondary metric graduations having indicated values each of which is a predetermined decimal fraction of said main metric graduations and said secondary metric graduations at least spanning a range of values equal to the difference in indicated value between adjacent main metric graduations,

said secondary weight being of predetermined mass movable along said secondary beam to any desired selected position therealong, said predetermined mass of said secondary weight when moved along said secondary metric graduations over said range producing a rebalancing effect equivalent to a change in position of the original main weight from one predetermined postion to the next adjacent predetermined position,

providing a main sequence of English weight unit graduations extending along the main beam with predetermined ones of said main English graduations corresponding to predetermined discrete positions, said sequence of main English graduations including a graduation having a value of "N" pounds and which corresponds in position to the main metric graduation which is 400 N grams,

providing an increased main weight 13.308% heavier than said original main weight and being intended for making English weight unit measurements, said increased weight being positionable along said main beam at said predetermined main English graduations and having a reading index for showing the user which of said English graduations corresponds with the predetermined position of said increased main weight, said increased main weight having its center-of-gravity aligned in the horizontal direction with the center-of-gravity of said original main weight,

providing a secondary sequence of English weight unit graduations extending along the secondary beam, said secondary English graduations having indicated values at least spanning a range of values equal to the difference in indicated value between adjacent main English graduations, and

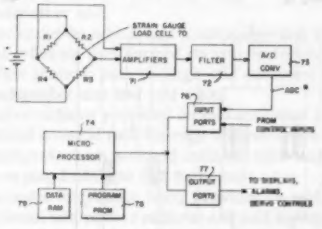
providing for secondary weight action along said range of secondary English graduations exerting a moment 13.398% greater than the moment of said secondary weight along said range of secondary metric graduations, secondary weight action along said range of secondary English graduations having its center-of-gravity aligned in the horizontal direction with said secondary weight action along said range of secondary metric graduations.

4,139,069

DIGITAL WEIGHING METHOD

Emiel De Senerpont Domis, and Robert M. Cadwell, both of San Jose, Calif., assignors to Acurex Corporation, Mountain View, Calif.

Filed Jun. 23, 1977, Ser. No. 809,273
Int. Cl.[2] G01G *19/52, 3/14;* B07B *13/08*
U.S. Cl. 177—1 **26 Claims**



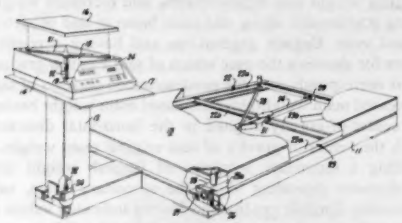
1. A weighing method where a weighing cell is responsive to moving items passing over an associated weight table and produces a digital count related to the weight of an item on the weight table comprising the following steps: initially while no item is on the weight table determining an average zero count; thereafter storing a digital count corresponding to a reference weight; running said items over said weight table, sensing said digital count for each item and, taking into account said average zero count, comparing such digital count to said reference weight count; and while no item is on the weight table again determining a new average zero count as in the first step.

4,139,070

DUAL PLATFORM COUNTING SCALE

Harlan B. Hanson, and Frank C. Rock, both of Santa Rosa, Calif., assignors to National Controls, Inc., Santa Rosa, Calif.

Filed Sep. 10, 1976, Ser. No. 722,058
Int. Cl.[2] G01G *19/00*
U.S. Cl. 177—200 7 Claims



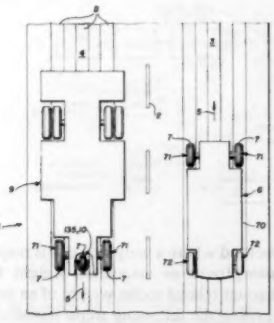
1. In a counting scale for determining the number of articles in a load: first and second platforms, a load cell connected to the platforms for delivering signals corresponding to the loads applied thereto, means responsive to the load cell signals for storing a signal corresponding to a sample on one of the platforms, said sample consisting of a predetermined number of the articles to be counted, means for combining the stored signal with the load cell signals to determine the number of articles in the load in either a first mode of operation in which both the sample and the load to be counted are placed on the first platform, a second mode in which the sample and load are both placed on the second platform, or a third mode in which the sample is placed on the first platform and the load is placed on the second platform, and means connected to the last named means for selectively conditioning said means for operation in the first, second or third mode.

4,139,071

ELECTRICALLY OPERATED VEHICLE AND ELECTRIFIED ROADWAY THEREFOR

Louis E. Tackett, Grandview, Tex., assignor to UNEP3 Energy Systems, Inc., Grandview, Tex.

Continuation-in-part of Ser. No. 662,127, Feb. 27, 1976, abandoned, which is a division of Ser. No. 579,131, May 20, 1975, abandoned. This application Mar. 1, 1977, Ser. No. 773,276
Int. Cl.[2] B60L *5/00, 9/00;* B60M *7/00*
U.S. Cl. 180—2 R 40 Claims



1. An automotive vehicle transportation system comprising, in combination,

A. a roadway having a substantially smooth vehicle supporting road surface,

B. at least one pair of elongated laterally spaced parallel electrical contact assemblies extending longitudinally of said roadway, said contact assemblies each including

a. an exposed electrically conductive top surface defined by a plurality of elongated flat metal plate sections,

b. elongated conductor means extending beneath said top surface in spaced relation to said metal plate sections,

c. resilient means supporting said plate sections in electrically isolated substantially end-to-end relation to one another with their top surface substantially flush with and forming a part of said rod surface,

C. supply electric conductor means connected to said elongated conductor means for supplying electric energy thereto, and

D. an electrically powered vehicle including

a. a first pair of wheels each having a resilient electrically conductive road engaging tire mounted thereon and electrically isolated from the vehicle, the wheels being mounted one on each side of the vehicle and spaced apart a distance substantially equal to the lateral spacing of said pair of contact assemblies whereby said vehicle may be driven along the roadway with one of said electrically conductive tires in contact with the electrically conductive metal plate members on each of said contact assemblies,

b. electric motor means for powering the vehicle, and

c. conductive path means including non-rotating pickup means between said motor means and said electrically conductive tires on said wheels for electrically connecting the tires to each other through said motor means,

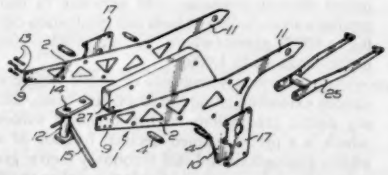
said resilient means of each of said contact assemblies normally maintaining said electrically conductive plate sections out of electrical contact with said elongated conductor means and being depressible by the weight of said vehicle to establish electrical contact between said plate sections and said elongated conductor means for supplying power through said electrically conductive tires to said motor means when said electrically conductive tires are positioned on said electrically conductive top surfaces of said contact assemblies.

4,139,072

MOTORCYCLE FORMED OF DETACHABLE FRAME MEMBERS

Anthony Dawson, 49 Harrison Rd., Malin Bridge, Sheffield S6 4NA, England

Continuation-in-part of Ser. No. 633,003, Nov. 18, 1975, abandoned. This application Oct. 6, 1977, Ser. No. 840,098
Claims priority, application United Kingdom, Nov. 21, 1974, 50595/74
Int. Cl.[2] B60K *5/12*
U.S. Cl. 180—33 A 6 Claims



1. A frame for a motorcycle, comprising:

two substantially wide main frame members, each being formed of a plate member that is substantially flat in cross section along its entire expanse and has a forwardly projecting portion, a downwardly projecting portion and a rearwardly projecting portion;

first spacer means for releasably securing said frame members together in constant parallel relationship at least over the forwardly projecting portions and downwardly projection portions;

the rearwardly projecting portions of said main frame members being adapted for releasably securing thereto a rear wheel assembly; and

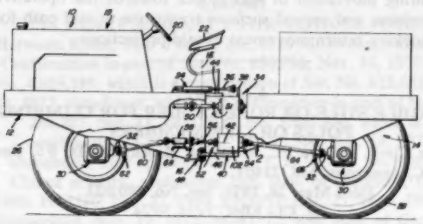
auxiliary plate members releasably secured to the downwardly extending portions of said main frame members for attachment to the engine, said auxiliary plate members being substantially wide and substantially coextensive with said downwardly extending portions to prevent distortion of the main plate members under loading by the engine.

4,139,073

DIVIDER GEAR CASE SUPPORT FOR ARTICULATED VEHICLES

David L. Curtis, and John L. Curtis, both of P.O. Box 1151, Great Falls, Mont. 59403

Filed Dec. 3, 1976, Ser. No. 747,314
Int. Cl.² B60D *1/02*
U.S. Cl. 180—51 **13 Claims**



1. In combination with an articulated vehicle having a pair of frame sections respectively supported by vehicle traction wheels, a transfer case, a power dividing transmission assembly mounted within the transfer case having input and output drive shafts and means rotatably mounting said drive shafts for rotation about spaced axes fixed relative to the transfer case, hinge means pivotally connecting the transfer case to one of the frame sections about an articulation axis intersecting one of said drive shaft axes, oscillation support means mounted on the other of the frame sections and pivotally connected directly to the transfer case for displacement thereof about said one of the drive shaft axes relative to the other of the frame sections and universal drive means connected to said drive shafts for transmitting power through said output drive shaft to the traction wheels.

4,139,074

SEISMIC EXPLORATION SYSTEM FOR ICE COVERED AREAS

Arlton H. White, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 12, 1976, Ser. No. 731,400
Int. Cl.² G01V *1/38*
U.S. Cl. 181—120 **16 Claims**

15. A method of marine seismic exploration in water beneath an ice layer comprising:

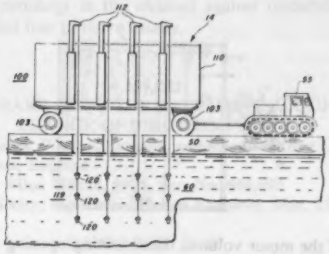
surveying a segment of a predetermined path of exploration along a terrain including a layer of ice covering a body of water and scouting locations of additional segments along the path while placing markers along the path designating respective locations corresponding to the segments,

forming respective apertures in the ice layer at each of the locations as designated by the markers and lowering a seismic source unit into the water through an aperture in the ice layer,

discharging the seismic source unit in the water to create a seismic disturbance, and additionally activating said seismic source unit subsequent to withdrawal from the water to clear any accumulation of ice on said seismic source units,

recording seismic signal data generated from the seismic disturbance, and

repeating the sequence of lowering the seismic source unit



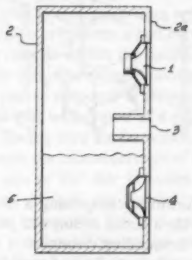
into the water through said apertures, discharging the seismic source unit in and out of the water, and recording seismic signal data generated from the seismic disturbance created thereby at each of the apertures.

4,139,075

LOUDSPEAKER DEVICE

Fumio Kobayashi, and Nobuaki Ban, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1977, Ser. No. 827,558
Claims priority, application Japan, Aug. 31, 1976, 51/116877[U]
Int. Cl.² H05K *5/00*; G10K *13/00*
U.S. Cl. 181—148 **3 Claims**



1. A loudspeaker device comprising:

a loudspeaker unit;

an enclosure on which said loudspeaker unit is provided;

a bass reflexing duct formed on said enclosure and defining a first acoustic path through said enclosure between said loudspeaker unit and said duct;

a passive radiator provided on said enclosure and defining a second acoustic path through said enclosure between said loudspeaker unit and said radiator, with said second path diverging from said first path; and

an acoustic impedance body provided in said second path between said passive radiator and said loudspeaker unit so that said duct and said passive radiator are in resonance at different frequencies.

4,139,076

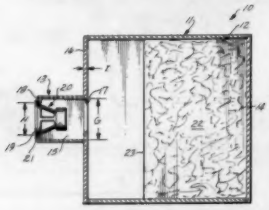
LOUDSPEAKER ENCLOSURE WITH ENHANCHED BASS RESPONSE

John O. Hruby, Jr., 1240 Alta Paseo, Burbank, Calif. 91501

Filed Jan. 30, 1978, Ser. No. 873,235
Int. Cl.² H04R *1/28*
U.S. Cl. 181—151 **13 Claims**

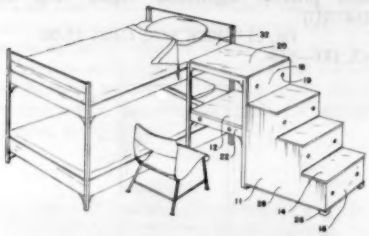
1. A loudspeaker enclosure comprising a housing defining therein a principal volume having a front wall and a substan-

tially smaller minor volume having a rear wall common to the front wall of the principal volume, the common wall defining a port communicating the minor volume only to the principal volume, and a speaker mounting opening defined in a front



wall of the minor volume, the mounting opening defining the only opening from the exterior of the housing to the interior thereof, and in which the speaker mounting opening opens essentially directly from the interior of the enclosure to the exterior thereof.

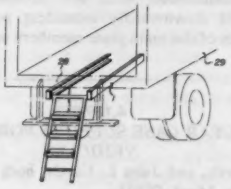
4,139,077
LADDER FURNITURE
Roberto E. Pena, Jr., 3003 W. Vermont, Blue Island, Ill. 60406
Filed Apr. 1, 1977, Ser. No. 783,813
Int. Cl.[2] E06C *1/00*; A47D *11/00*; A47B *85/00*
U.S. Cl. 182—35 **7 Claims**



1. An article of furniture comprising a chest of drawers so arranged as to provide a series of steps to provide support for a foot ascending or descending, wherein:
   a. the drawers are substantially horizontal and movable and
   b. substantially horizontal platforms covering at least some of the drawers and serving as step treads and
   c. the front of said drawer corresponds to the rise of the particular step, and
   further comprising a frame having legs and a top platform supported thereby and adjacent the chest so as to provide the last top step.

4,139,078
LADDER ASSEMBLY
John R. Keller, R.R. #2, Hamilton, Ontario, Canada
Filed Oct. 28, 1977, Ser. No. 846,354
Claims priority, application United Kingdom, Feb. 2, 1977, 4317/77; May 7, 1977, 19242/77
Int. Cl.[2] E06C *5/04*
U.S. Cl. 182—88 **5 Claims**

1. A ladder assembly comprising:
   ladder storage means having an entrance at one end thereof,
   a ladder slidable relative to said ladder storage means through said entrance between a retracted storage position in said ladder storage means and an extended operative position in which said ladder projects from said ladder storage means,
   first retaining means for releasably retaining said ladder in said storage position, and
   second retaining means for retaining said ladder relative to said ladder storage means when said ladder is in said operative position,
   said second retaining means comprising a pair of wedge-shaped abutments respectively secured to said side members adjacent said entrance in the paths of movement of



said projections during the sliding of said ladder, and said abutments having first surfaces inclined to said path to facilitate sliding of said projections over said abutments during movement of said ladder towards the operative position, and second surfaces transverse to said path for blocking return movement of said projections.

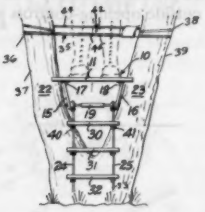
4,139,079
FLEXIBLE STILE OR ROPE LADDER FOR CLIMBING POLES OR LIKE MEMBERS
Trevor Clark, 2 Cove Pl., Whitehall Beach, R.F.D. #5, Box 234C, Annapolis, Md. 21401
Filed Mar. 24, 1978, Ser. No. 890,022
Int. Cl.[2] E06C *1/56, 9/14*
U.S. Cl. 182—93 **16 Claims**

1. A ladder assembly for ascending and descending a vertical pole or like member comprising a plurality of step means, stile means interconnecting said steps in spaced relationship, means for slidably connecting the midpoint of at least some of said step means to said vertical pole or like member, and means at one end of said assembly for vertically suspending the same from the upper end of said vertical pole or like member.

4,139,080
HUNTER'S TREE STAND
Milton C. Wells, 5583 Clinton Dr., Erie, Pa. 16509
Filed Mar. 6, 1978, Ser. No. 883,643
Int. Cl.[2] E06C *1/56, 7/48*; A47C *9/10*
U.S. Cl. 182—115 **5 Claims**

1. A tree platform adapted to be supported between two tree branches comprising,
   a plank (**11**) having recesses (**12, 13**) in its ends to receive the branches of a tree,
   said plank being adapted to be received between two generally vertical branches, and
   outward force applying means for engaging said tree trunk for supporting said platform,

said platform having,
legs (15, 16),
hinge means hingedly connecting said legs to said platform, and



said force applying means being adapted to engage said legs forcing them outwardly in engagement with said tree branches for holding said platform in position.

4,139,081

DISK BRAKE ASSEMBLY FOR VEHICLE WHEELS

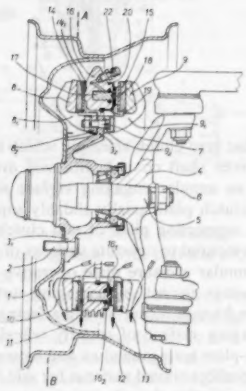
Hermann Klaue, Tour d'Ivoire 24e, 1820 Montreux, Switzerland

Continuation-in-part of Ser. No. 634,996, Nov. 24, 1975, Pat. No. 4,054,189, which is a continuation of Ser. No. 415,681, Nov. 14, 1973, abandoned, which is a continuation-in-part of Ser. No. 288,287, Sep. 12, 1972, Pat. No. 3,885,650, which is a continuation-in-part of Ser. No. 73,566, Sep. 18, 1970, abandoned. This application Jun. 9, 1976, Ser. No. 694,399

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1969, 1960286; Dec. 27, 1969, 1965171; Dec. 27, 1969, 1965170; Switzerland, Nov. 17, 1972, 16741/72; Fed. Rep. of Germany, Nov. 22, 1975, 2552451; Dec. 19, 1975, 2557331

Int. Cl.² F16D *55/10*

U.S. Cl. 188—18 A **11 Claims**



1. A hub and disk brake assembly for a vehicle comprising a hub, a flange integral with the hub and extending radially outwardly therefrom, circumferentially spaced means for attaching a wheel to the flange, a plurality of extension arms on the flange spaced circumferentially from each other with open spaces therebetween, an annular brake housing having two radially extending wall members spaced axially to provide a channel therebetween which is open on its radially exterior side, each of said wall members having circumferentially spaced integral axially extending flanges which combine with each other to form circumferentially spaced walls around the radially inner side of the channel with openings therebetween for air flow into the channel, flanges which extend radially inwardly from the said axially extending flanges with the last said flanges on one wall member overlapping the extension arms on one side and the last said flanges on the other wall member overlapping the opposite side of the extension arms, means for fastening the overlapping flanges to the extension arms, lined disk brake members operably disposed in the channel and fully lining the brake housing, fluid actuating means between the disk brake member, and means for supporting the disk brake members in the channel against circumferential movement but free to move axially.

4,139,082

DISC BRAKE STRUCTURE PERMITTING QUICK CHANGE OF FRICTION PADS

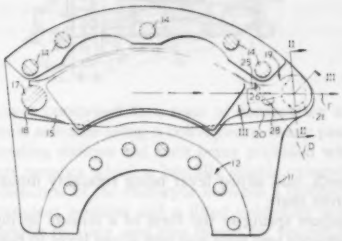
Roy E. Edwards, Warley, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 8, 1976, Ser. No. 664,695

Claims priority, application United Kingdom, Mar. 21, 1975, 11810/75

Int. Cl.² F16D *65/02*

U.S. Cl. 188—73.6 **6 Claims**



1. A spot-type disc brake comprising a disc, a caliper straddling part of the disc's periphery, a pad on each side of the disc within the caliper, means within the caliper for urging the two pads to engage the disc, the caliper having an opening for the insertion of each pad so disposed at the end of the caliper that the pad is inserted and withdrawn in a peripheral direction, a closure member having two limbs which are pivotal as one about an axis out side the circumference of the disc and parallel to the rotational axis of the disc between a position wherein each limb projects through the respective opening into the caliper to abut the respective pad and render it peripherally immovable and a position allowing the pad to be withdrawn and inserted, each limb having an abutment engaging the pad in a projection-and-recess type engagement and the caliper having an abutment engaging the far end of the pad whereby the pad in use is supported between two complementary abutments, the geometry being such that the pad and the limb forms a beam-like linkage between the caliper's abutment and the pivotal axis constructed and arranged to prevent buckling of said beam-like linkage, and a locking means engageable with one limb to hold both limbs in the first-mentioned position to support each said linkage against radial movements.

4,139,083

ADJUSTING DEVICE FOR AN INTERNAL SHOE DRUM BRAKE

Kazuo Hoshino, Sayama, and Naomasa Tsunada, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 7, 1977, Ser. No. 831,286

Claims priority, application Japan, Sep. 9, 1976, 51-108315

Int. Cl.² F16D *65/56*

U.S. Cl. 188—79.5 GC **2 Claims**

1. An internal shoe drum brake assembly comprising:
a back plate;
two brake shoes;
shoe return springs biasing said shoes to brake release positions;

an extensible strut having one end engaged by one of said two brake shoes;

a cross shaft on which said strut is rotatably mounted;

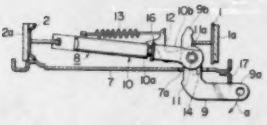
a toggle lever forming part of a manually actuated parking brake means, said toggle lever being mounted on said cross shaft for rotation therewith extending through said back plate, said toggle lever having an operating arm disposed on one side of said back plate and an actuating arm disposed on the opposite side of said back plate and engaged by the other one of said two brake shoes;

said strut having a rotary member with ratchet teeth on its periphery which may be rotated to extend said strut;

an adjust lever with a pawl engageable with said ratchet teeth, said adjust lever being rotatably mounted on said cross shaft;

an adjust spring in the form of a tension spring extending between said strut and said adjust lever to bias said adjust lever in a direction to cause the pawl to rotate said rotary member in a direction to extend said strut; and

stopper means for transmitting the rotational movement of said adjust lever due to the bias of said adjust spring to said toggle lever to press said operating arm into engagement with a portion of said one side of said back plate thereby to press a portion of said cross shaft into engagement with said opposite side of said back plate in such a manner that the back plate is interposed between said operating arm and said cross shaft.



4,139,084

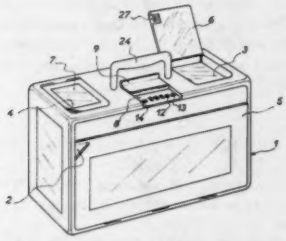
HAND LUGGAGE WITH MULTIPLE COMPARTMENTS

Norbert H. J. Linke, Milan, Italy, assignor to S. T. DuPont, Paris, France

Continuation of Ser. No. 722,296, Sep. 10, 1976, abandoned. This application Oct. 18, 1977, Ser. No. 843,239

Int. Cl.[2] A45C *3/00*

U.S. Cl. 190—48 **4 Claims**



1. Hand luggage comprising a top wall; a handle connected to said top wall for holding said hand luggage in upright position; a plurality of fixed compartments in said hand luggage, each of said compartments including a cover, means biasing said cover to open position; and means for securing said cover in closed position, at least one of said compartments and covers therefor being positioned in said top wall and adapted to be opened while said luggage is maintained in said upright position; an individual outside opening-control for each of said compartments adapted to release each cover, each opening-control remote from each compartment; and a single control panel positioned on a portion of said top wall and containing all of said individual outside opening-controls in close juxtaposition.

4,139,085

DRY DISC-TYPE CLUTCH

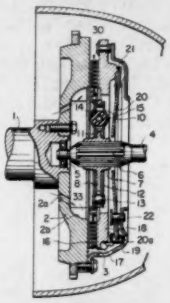
Yasuhide Kanbe, Toyota; Shigemichi Yamada, Nishio; Tadashi Nakagawa, Toyota, and Mitsuyuki Noguchi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken, Japan

Filed Sep. 2, 1976, Ser. No. 720,083

Claims priority, application Japan, Dec. 16, 1975, 50-168936[U]; Apr. 15, 1976, 51-46043[U]

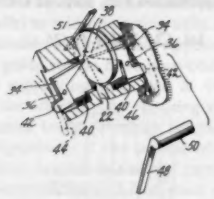
Int. Cl.[2] F16D *13/64*

U.S. Cl. 192—107 R **12 Claims**



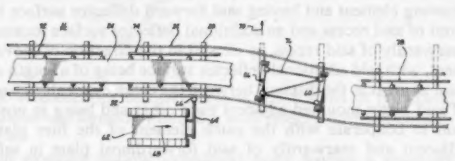
1. In a dry-disc type clutch assembly which includes a drive shaft and a driven shaft coaxial with said drive shaft, a fly wheel having an annular engaging surface secured on said drive shaft, a clutch plate axially slidably supported on said driven shaft, a supporting plate of said clutch plate, annular friction facings secured to opposite surfaces of said supporting plate and an annular pressure plate operative to urge one of said friction facings against said engaging surface of said fly wheel, said one friction facing having a facing surface which faces said engaging surface of said fly wheel, a plurality of waved cushion-plate springs sandwiched between said friction facings, so as to effect waved surfaces for said friction facings, thereby creating wedge-shaped gaps between said engaging surface of said fly wheel and said facing surface of said one friction facing, said springs operating to create wedge-shaped gaps between the surface of the other of said friction facing and the surface of said pressure plate, the improvement comprising a plurality of grooves defined in said facing surface of said one friction facing, said grooves extending radially from the inner periphery thereof to a position a distance short of the outer periphery of said one friction facing, said annular engaging surface of said fly wheel which said facing surface of said one friction facing engages being formed devoid of grooves and with a generally flat planar configuration, said facing surface of said one friction facing also having formed therein a plurality of slots extending continuously from the inner periphery to the outer periphery of said one friction facing, said slots being structured to discharge powder produced in said clutch assembly due to wear or attrition of said friction facings.

4,139,086
SLUG REJECTOR
George E. Fafard, 22 Oakland Cir., Abington, Mass. 02351
Filed Aug. 15, 1977, Ser. No. 824,546
Int. Cl.[2] G07F 3/02
U.S. Cl. 194—97 A 7 Claims



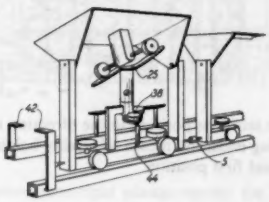
1. A slug-rejecting device, comprising means for grasping a metal disc, such as a coin or slug by contacting both faces thereof, means for thereafter moving the grasping means along a predetermined path, means positioned in the path of the coin or slug carried by the grasping means to create a resistance to travel of the coin or slug past said means, said resistance being greater than the lateral force needed to force a smooth-faced disc out from between the grasping means, but less than the force needed to force a disc having surface embossments such as are on coins.

4,139,087
SHIFTABLE CONVEYOR
James R. Westhoff, Phoenix; Harry H. Waight, Scottsdale, and John J. Glancy, Phoenix, all of Ariz., assignors to Marathon Steel Company, Phoenix, Ariz.
Filed Apr. 13, 1977, Ser. No. 787,451
Int. Cl.[2] B65G 41/00
U.S. Cl. 198—309 9 Claims



1. In a shiftable conveyor system including:
(a) a conveyor having a conveyor belt and a longitudinal and a lateral axis; and
(b) a vehicle for shifting the conveyor in a lateral direction, said vehicle including an arm for engaging said conveyor and applying lateral shifting forces to said conveyor;
said conveyor comprising in combination:
(a) a series of skids spaced along the longitudinal axis of said conveyor and generally aligned with the lateral axis of said conveyor;
(b) rail means connected to said skids by means which permit
i. maintaining said skids in a predetermined spatial relationship, and
ii. receiving the forces from the arm on said vehicle and translating the shifting forces exerted by the arm into lateral movement of said skids;
(c) a plurality of frames for supporting said conveyor belt, said frames being spaced along the longitudinal axis of said conveyor belt;
(d) structural means rigidly interconnecting independent sequential pairs of said frames; and
(e) connecting means for coupling each rigidly interconnected pair of frames to an adjacent pair of said skids to permit relative displacement between each adjacent pair of skids and the corresponding pair of rigidly interconnected frames as the arm on said vehicle transmits the shifting forces to said rail means.

4,139,088
CONVEYER OF THE TILT TRAY TYPE
Poul A. Olesen, Aarhus, Denmark, assignor to Kosan Crisplant A/S, Denmark
Filed Apr. 12, 1977, Ser. No. 786,774
Claims priority, application United Kingdom, Apr. 12, 1976, 14842/76
Int. Cl.[2] B65G 47/38
U.S. Cl. 198—365 6 Claims

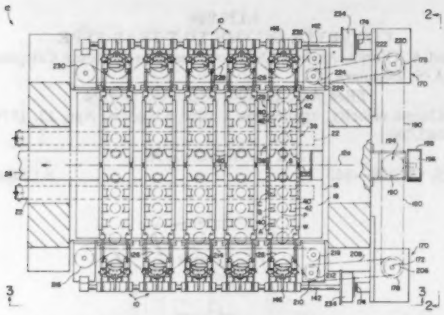


1. A conveyor comprised by a train of consecutive article carrier elements movable along a conveyor or frame past one or more unloading stations and each being provided with an article support member which is laterally tiltable crosswise to the moving direction of the conveyor between a substantially horizontal transport position and a tilted unloading position without otherwise rotating, and cam means for retaining said support member in said transport position and for tilting said support member to said unloading position at said unloading station, said cam means including a cam member carried by one of said carrier elements or said support member, and a cam engaging member carried by the other of said carrier elements or said support member, said cam member being formed of a generally horizontal surface portion interconnecting surface portions which are inclined relative to the horizontal surface portion, the cam member and cam engaging member being rotatable relatively with respect to each other for causing said support member to be tilted as said cam engaging member follows said inclined portions at said unloading station and for holding said support member in said transport position by vertical pressure produced by engagement of said cam engaging element with said horizontal surface portion, and means associated with said unloading station for producing said relative rotation between the cam member and the cam engaging member.

4,139,089
ARTICLE FEED MECHANISM
James W. Jensen, Hastings, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Aug. 15, 1977, Ser. No. 824,750
Int. Cl.[2] B65G 25/02
U.S. Cl. 198—621 21 Claims

21. An article feed mechanism mountable on a machine for transferring articles along a linear path relative to work stations of the machine comprising, a pair of parallel feed bars extending in the direction of said path and having opposite ends, and support and drive means at said opposite ends of said feed bars, said support and drive means comprising a mounting bracket and a support bracket, feed bar support means on said support bracket supporting said feed bars for longitudinal and lateral reciprocation relative to said support bracket and including means releasably coupled with said corresponding ends of said feed bars, means to reciprocate said feed bar support means longitudinally and laterally relative to said support bracket, means pivotally interconnecting said support bracket and mounting bracket for pivotal movement of said support bracket relative to said mounting bracket between a first posi-

tion locating said feed bar support means for coupling with said corresponding ends of said feed bars and a second position



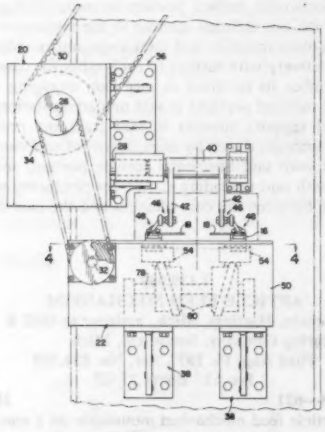
spaced from said first position in the direction away from said corresponding ends, and means releasably holding said support bracket in said first position.

4,139,090

ARTICLE TRANSFER MECHANISM

Roger J. Nelsen, Hastings, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 23, 1976, Ser. No. 754,083
Int. Cl.² B65G *25/02*
U.S. Cl. 198—740 **9 Claims**



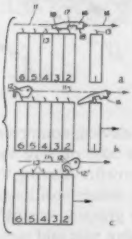
1. An article transfer mechanism comprising, a pair of feed bars having cooperable feed fingers therebetween, feed bar support members each supporting one of said feed bars for longitudinal reciprocation, means supporting said support members for linear reciprocation laterally toward and away from one another, means to reciprocate said feed bars longitudinally relative to said support members, cam means supported for rotation about an axis extending laterally of said feed bars and parallel to the plane of lateral movement of said feed bars, and follower means on each said support member directly interengaging with said cam means to displace said support members toward and away from one another in response to rotation of said cam means.

4,139,091

TRANSPORT DEVICE FOR THE FILTER PLATES OF A FILTER PRESS

Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke Michelbache Hutte, Fed. Rep. of Germany

Filed May 19, 1977, Ser. No. 798,574
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2624143
Int. Cl.² B65G *19/26*
U.S. Cl. 198—732 **3 Claims**



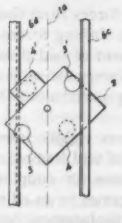
1. Transport device for the displacement of filter plates movably mounted in a filter press, comprising at least one transport pawl pivotally mounted on a drawing element which is driven to move above said plates in the direction of opening with said pawl comprising a hook-shaped recess cooperating with upwardly extending catch elements on said filter plates and a forward deflector surface in front of said recess as viewed in the direction of movement cooperating with the catch element of an adjacent plate in a stack of plates and thereby preventing said pawl from dropping into position for its recess to receive a catch element until said recess reaches the catch element of the forwardmost plate in said stack of plates, the improvement in said transport device comprising, at least one additional transport pawl pivotally mounted on said drawing element and having said forward deflector surface in front of said recess and an additional deflector surface located rearwardly of said recess, as viewed in the direction of movement, with said additional deflector surface being of a length at least as great as the distance between the catch elements of two of said plates mounted adjacent each other and being in position to cooperate with the catch element of the fiter plate adjacent and rearwardly of said forwardmost plate in said stack of plates so that said recess in said additional transport pawl cannot receive the catch element of said forwardmost plate in said stack of plates.

4,139,092

CONVEYOR HAVING HORIZONTALLY SUSTAINED CARRIAGES

Shoji Yamano, Akashi, Japan, assignor to Yamato Scale Company, Ltd., Japan

Filed Jan. 4, 1977, Ser. No. 756,645
Claims priority, application Japan, Jun. 22, 1976, 51-82293[U]
Int. Cl.² B65G *17/18*
U.S. Cl. 198—800 **2 Claims**



1. A conveyer system, comprising a pair of endless roller

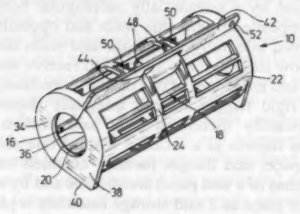
chains stretched in parallel along a predetermined transportation path and driven by at least a pair of chain wheels fixed on a common driving shaft, a plurality of carriages sustained horizontally between said pair of roller chains, each of said carriages including a pair of supporting axles extending coaxially and horizontally from the opposing side walls of said carriage, a pair of horizontal guide rollers having pivotal shafts disposed in parallel to said supporting axles and in horizontally separated relationship on one of said opposing side walls and a pair of vertical guide rollers having pivotal shafts disposed in parallel to said supporting axles and in vertically separated relationship on the other of said opposing side walls, said pair of supporting axles being pivotally coupled to said pair of roller chains respectively at the outside of said guide rollers, guide rails disposed on each side of said carriages along at least a part of said transportation path in contact with certain of said guide rollers of each carriage, said carriages being maintained in horizontal positions when traveling selected horizontal, vertical and inclined paths as determined by said guide rails.

4,139,093

HINGED HOLDER FOR DISC-LIKE OBJECTS

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Dec. 27, 1977, Ser. No. 864,819
Claims priority, application Canada, Apr. 5, 1977, 275578
Int. Cl.[2] A45C *11/00*; B65D *11/20*
U.S. Cl. 206—0.82 **7 Claims**



1. A holder for disc-like objects constructed of polymeric material and formed by molding as an integral element, consisting of

an elongate hollow cylindrical body having a generally circular cross-section of diameter substantially that of the disc-like objects to be packaged therein, and continuous integral annular end walls which define circular openings at the ends of the body having a diameter less than the diameter of the coins and having the same centre of curvature as that of the body,

said elongate body being formed of two semi-circularly cross-sectioned portions hingedly joined together at one common edge by a continuous longitudinal living hinge that biases said body portions apart and releasably joined together at the other common edge to enable opening of said body to occur at the other common edge and hinging of the two portions relative to each other to occur along said continuous hinge to gain access to the interior of the body,

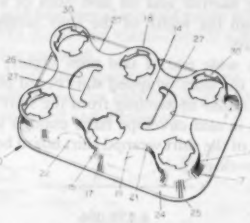
said releasable join being provided by the interaction of at least one wedge-shaped upwardly-extending projection provided at and tapering towards the arcuate extremity of a resiliently flexible tongue extending from adjacent the midpoint along the length of one curvilinear extremity of said body and a slot having a length slightly greater than the transverse dimension of the tongue and formed in an upright flange extending from the other curvilinear extremity of said body in a plane which passes through the body hinge line, said slot receiving said tongue therethrough.

4,139,094

CARRIER FOR BOTTLES

James W. Berry, Maumee, and Samuel C. Markwood, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 6, 1977, Ser. No. 794,436
Int. Cl.[2] B65D *75/00*
U.S. Cl. 206—158 **16 Claims**



1. A single piece semi-rigid plastic carrier for containers comprising:

a planar top panel;

a peripheral wall extending downwardly from the periphery of said panel, said wall having plural outwardly convex arcuate first wall portions and plural outwardly concave second wall portions disposed intermediate said first wall portions and blending therewith to define plural compartments for containers;

a ledge extending outwardly from each of said second wall portions;

a peripheral skirt depending downwardly from said ledges and from said first wall portions;

said outwardly convex arcuate first wall portions including an upper portion with substantially vertically disposed wall portions and lower portions merging with said vertically disposed upper wall portions which extend outwardly and downwardly therefrom and which directly blend with said peripheral skirt at the corners of said carrier;

carrier gripping means associated with said panel;

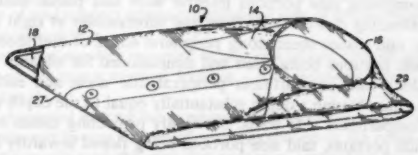
said planar top panel having a plurality of bottle supporting apertures formed therein, each of said apertures having plural, inwardly extending yieldable tabs disposed in the same plane as said planar top panel and adapted to support containers in compartments and said carrier further including anti-nesting means disposed internally thereof.

4,139,095

SHIRT PACKAGE

Mark Weaver, Pottsville, Pa., assignor to Phillips-Van Heusen Corporation, New York, N.Y.

Division of Ser. No. 617,099, Sep. 26, 1975, Pat. No. 4,046,253.
This application Jul. 11, 1977, Ser. No. 814,155
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.[2] B65D *85/18*
U.S. Cl. 206—278 **2 Claims**



1. The combination of a shirt package comprising a rectangular shirt board with a shirt wrapped about said board with an

envelope for receiving said shirt package, said envelope comprising:

a lower ply and an upper ply of flexible sheet material, each ply of a length slightly larger than the length of the shirt wrapped rectangular shirt board to be accommodated, said upper ply overlying, but separable from, said lower ply, said plies joined together along at least three edges thereof;

a relatively narrow end on said plies of a length slightly larger than the width of the shirt wrapped rectangular shirt board;

a relatively wide end of said plies slightly larger than the width of the shirt wrapped shirt board plus the height of the shirt collar upstanding from the shirt board; and

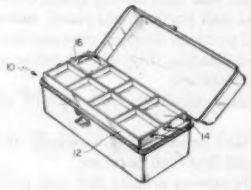
an opening in said envelope large enough to accommodate insertion of the shirt wrappd shirt board between said plies of the envelope.

4,139,096

TACKLE BOX IMPROVEMENT

Samuel M. Sieger, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Jun. 6, 1977, Ser. No. 803,758
Int. Cl.[2] B65D *85/04, 1/36*
U.S. Cl. 206—315 R **2 Claims**



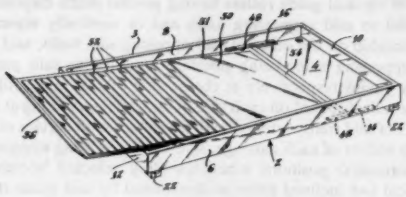
1. A tackle box having a lid, at least one shelf with a plurality of separate compartments, at least one of said compartments being of rectangular shape in plan and having substantially planar peripheral sides walls, a bottom wall and an open top portion, said compartment being intended for removably storing at least one elongated flexible filamentary element such as a fishing line leader, or the like, said filamentary element being collapsible to a form having a relatively small minimum dimension and expanding under its own resilience into a coil of larger diameter than a minimum transverse cross section through said compartment, and cover means for partially enclosing said compartment, said cover means defining an access opening, said access opening having a minimum dimension greater than said relatively small minimum dimension of the element in its collapsed form and a maximum dimension smaller than the larger diameter of said expanded coil whereby upon being inserted into said compartment in its collapsed state, said coil expands to a dimension larger than said aperture preventing accidental release of the coil from the compartment, said cover means comprising a generally planar rectangular sheet and said access opening comprising a circular aperture in said sheet, said cover means including supporting means for supporting said cover means on said compartment, said supporting means comprsing side portions integral with said planar sheet and extending downwardly from and substantially at right angles to said planar sheet along peripheral edges of said sheet, said side portions being sized and dimensioned for slidably fitting along said compartment periperal side walls and each side portion having a depth substantially equal to the depth of said compartment side walls, outwardly projecting means on said side portions, said side portions being flexed inwardly by the compartment side walls to provide frictional engagement between said outwardly projecting means and planar portions of the respective compartment side walls to retain said cover means on said compartment.

4,139,097

STACKABLE CONTAINER TRAY FOR STORING AND DISPLAYING FLAT OBJECTS

Robert G. Bowman, Darien, and John G. Russell, Fairfield, both of Conn., assignors to The C. R. Gibson Company, Norwalk, Conn.

Filed May 2, 1977, Ser. No. 792,979
Int. Cl.[2] B65D *85/00*
U.S. Cl. 206—425 **5 Claims**



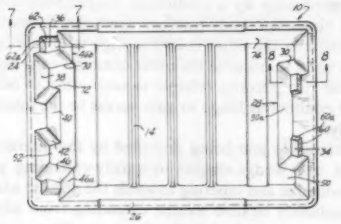
1. A system for storing and displaying for convenient viewing substantially flat objects such as photographs, recipes, stamps, or the like, held in envelopes of storage assemblies each of which includes a multiplicity of envelopes hinged to a substantially flat rectangular supporting panel so as to lie in overlapping relation upon the panel yet leaving opposite side edge portions of the panel unobstructed, said system comprising a plurality of containers stackable one upon another, each of said containers consisting essentially of a unitary, shallow tray-like structure formed by a substantially rectangular bottom wall bordered by opposite upright side walls and opposite upright end walls formed integrally therewith, said walls defining an open-top shallow storage space adapted to receive and encompass the panel and envelopes of one of said assemblies, said side walls having rigid flanges formed integrally therewith and protruding inwardly therefrom over said bottom wall in spaced relation thereto at a location toward one end only of said storage space, said flanges forming channels into which said edge portions of a said panel are slidable and by which the panel is held in place as a said storage assembly is placed into the container, said flanges being sufficiently narrow that the envelopes on a said panel held in said channels are swingable upwardly free of said flanges for selectively viewing individual envelopes on the panel.

4,139,098

THREE-WAY TOTE BASKETS

Leslie Mollon, Southfield, Mich., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Continuation-in-part of Ser. No. 492,238, Jul. 26, 1974, abandoned. This application Feb. 23, 1976, Ser. No. 659,981
Int. Cl.[2] B65D *21/04*
U.S. Cl. 206—507 **2 Claims**



1. Stacking and nesting baskets each having a continuous peripheral top wall, a bottom wall, and upwardly and outwardly sloping side and end walls, the end wall at one end of each backet having a single wide centrally located interior rib extending from the bottom of said basket to the top wall

thereof, said rib having upwardly converging side walls connected by an upwardly and outwardly inclined intermediate wall, said rib being formed adjacent its upper end with a pair of seats each indented in the top corners of said rib and intersecting the intermediate wall and one of the side walls of said interior rib, and located slightly below the top of said basket, said seats accordingly being spaced laterally inwardly from the side walls of said basket, the indentations in the top corners of the rib forming the seats each having a horizontal seating surface and a transversely extending upwardly and longitudinally outwardly inclined side guide and locating wall facing the opposite end of the basket and connecting said seats to said top wall, the outer surface of said one end of said basket having an outwardly concave groove matching said internal rib, the bottom wall of said basket at said one end thereof having corner seating portions coplanar therewith at opposite sides of said interior rib defined between the side and end walls of said basket and the side walls of said interior rib, and hence extending to the extreme corners at said one end of said basket at the bottom thereof, the end wall at the other end of said basket having corner pillars extending from the bottom of said basket to the top thereof, said pillars each having a first wall inclined upwardly and outwardly toward the adjacent side of said basket and a second wall inclined upwardly and outwardly toward the adjacent end of said basket, each of said pillars having a seat indented into the top corner portion thereof adjacent its upper end intersecting said first and second inclined walls of said pillar and located slightly below the top of said basket at the same horizontal level as the seats at the said one end of said baskets, the seats at the said other end of said basket being located adjacent the top corners thereof and accordingly being spaced laterally thereat beyond the seats at the said one end of said basket, the indentations at the upper corners of the corner pillars having horizontal seating surfaces and longitudinally extending upwardly and laterally outwardly inclined side guide and locating walls connecting said last mentioned seats to said top wall and transversely extending upwardly and longitudinally outwardly inclined side guide and locating walls connecting said last mentioned seats to said top walls, the longitudinally and transversely extending guide and locating walls being substantially perpendicular to each other in horizontal section, the bottom wall at the said other end of said basket extending longitudinally of said last mentioned basket into the space between said pillars to form seating portions coplanar with the bottom wall of said basket and in longitudinal alignment with at least a portion of the seats provided at the said one end of said basket, the seating portions at the said one end of said basket being in longitudinal alignment with at least a portion of the seats provided at the said other end of said basket, the end wall at said other end of said basket being provided with a centrally located interior rib substantially narrower than the interior rib at said one end of said basket and extending from the bottom of said basket to the top thereof, said rib having upwardly converging side walls connected by an upwardly and outwardly inclined intermediate wall, the end wall at said other end of said basket having at its exterior an upwardly tapered channel conforming to the interior rib and shaped to receive the corresponding interior rib of a similarly oriented basket in nested relationship therebeneath.

4,139,099

SHRINK WRAPPING

Morgan A. Daly, 606 Washington St., Brookline, Mass. 02146, and Paul R. Yager, 24 Pilgrim Rd., Newton, Mass. 02168

Filed Jul. 8, 1977, Ser. No. 813,793
Int. Cl.[2] B65D *65/02, 69/00*
U.S. Cl. 206—575 **8 Claims**

1. Shrink wrapping kit apparatus readily assembleable by an individual of ordinary skill into a neatly sealed and shrink-wrapped package for mounting, protecting and displaying a graphic work without the use of the usual edge sealing and heat shrinking equipment, said apparatus comprising,

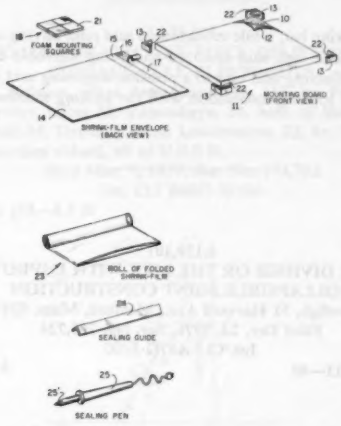
mounting board means for carrying a graphic work to be protected and displayed,

a source of shrink film means for covering all the edges of said mounting board,

and means for sealing said shrink film about all the edges, with the edge sealing means being solely of the group consisting of cold sealing means, a sealing guide, and a fixed-tip hand-held movable heat pen, wherein said shrink film means may be edged sealed about said board means by moving said heat pen along said guide which is pressed down over the shrink film means outside a respective edge of the graphic material.

7. Shrink wrapping kit apparatus comprising,

mounting board means for carrying a graphic work to be mounted, protected and displayed,



a source of shrink film means for covering all the edges of said mounting board,

means for sealing said shrink film about all the edges,

corner reinforcing means for attachment to the corners of said mounting board means for protecting the corners thereof formed with means for attachment to the corners of said mounting board means with the width of each corner reinforcing means no greater than the thickness of said mounting board means so that each corner reinforcing means may be pressed into the corners of said mounting board means flush with the edges of said mounting board means to protect the corners while being invisible from the front of said mounting board means.

4,139,100

GUN RACK

Presley O. Reed, 4678 Bowen Ave., Memphis, Tenn. 38122

Filed Dec. 7, 1977, Ser. No. 858,412
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—4 **11 Claims**

11. A gun rack comprising:

a pair of opposed stiles,

gun support means projecting from each of said stiles,

one of said support means comprising a row of trigger-guard receiving pins,

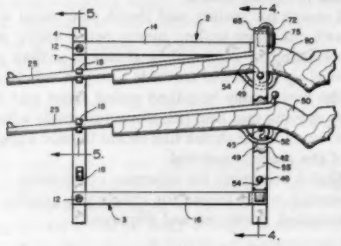
a securing member mounted at one end of said row of pins, and having a vertical locking - bar receiving aperture therein,

an elongated locking bar positionable in alignment with said pins and having a series of openings spaced on the order of the spacing of the pins for receiving respective pins in respective openings,

said pins being resilient and transversely deflectible,

a locking member mounted at the other end of the row of

pins and spaced a distance from the securing member less than the length of said locking bar,



said locking bar, while mounted on said pins, having one end insertable into said aperture and being movable endwise by deflecting said pins to a position disposing said locking bar in locking association with the locking member.

4,139,101

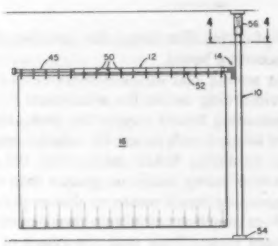
SPACE DIVIDER OR THE LIKE WITH IMPROVED COLLAPSIBLE JOINT CONSTRUCTION

Keivan Towfigh, 51 Harvard Ave., Medford, Mass. 02155

Filed Dec. 23, 1976, Ser. No. 753,724

Int. Cl.[2] A47G *5/00*

U.S. Cl. 211—86 **5 Claims**



1. In an arrangement of a first member and a second member in which the first member is connected to the second member for generally pivotal movement between a raised, extended position and a downwardly extending collapsed position, an improved connecting device comprising:

a connector member;

means for securing the connector member to the second member;

said connector member having a pair of slots formed therein, said slots being angularly spaced and meeting at a juncture, one of said slots being longer than the other of said slots, said connector being oriented so that one of said slots extends generally downwardly from the juncture;

a pair of pins attached to said first member, said pins extending through the slots in the connector member;

said pins being spaced by an amount which is less than the length of said one of said slots whereby when said first member is disposed at an angle with respect to said second member the pins will be in alignment with said one of said slots and both of said pins may be advanced downwardly into said one slot to lock the first member in said extended position.

4,139,102

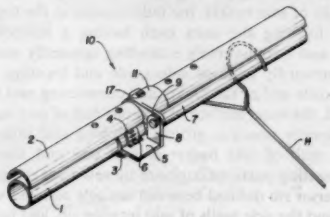
CLOTHES HANGER RETENTION BAR

Mary J. Winton, P.O. Box 889, Placerville, Calif. 95667

Filed Dec. 28, 1977, Ser. No. 865,121

Int. Cl.[2] E05B *73/00*; A47H *13/00*

U.S. Cl. 211—124 **2 Claims**



1. A clothes hanger retention bar comprising a clothing pole, bracket means attached to said clothing pole, clamping means attached to said bracket means, and lock means disposed on said bracket means and said clamping means whereby said bracket means and said clamping means can be locked together; said bracket means includes a semi-cylindrical plate member fastened to said clothing pole by a hose clamp, and wherein said bracket means has a horizontal portion extending outwardly from said semi-cylindrical plate which terminates in a vertically extending link; and wherein said clamping means includes a second semi-cylindrical plate connected to said bracket means by a hinge means through said vertical link; said clamping means has an upper and lower portion, and wherein said lower portion is axially adjustable relative to said upper portion.

4,139,103

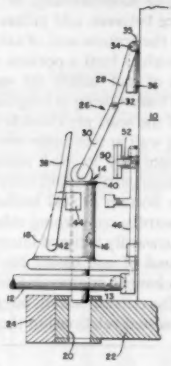
MINE CAR COUPLING INCLUDING SAFETY MECHANISM

Robert M. Haven, 204 E. Emma, Lafayette, Colo. 80026

Filed Feb. 1, 1978, Ser. No. 874,330

Int. Cl.[2] B61G *1/00*

U.S. Cl. 213—75 B **9 Claims**



1. A safety mechanism for a mine car coupling of the type which comprises a draw pin, a pin guide connected to a first mine car with an essentially vertical opening therein for receiving the draw pin, a space beneath the pin guide for receiving a link connected to a second mine car, the link having an opening therein, the draw pin including an upper shoulder which will engage an upper surface of the pin guide and hold the draw pin in its lowered position for insertion through the link opening to couple the cars together, the safety mechanism comprising a first interposer pivotally connected to the first car at a point below the upper shoulder of the draw pin and

projecting above the upper shoulder a predetermined distance when the pin is in its lowered position, means for urging the first interposer toward the upper shoulder so that when the draw pin is in its lowered position the first interposer will engage an outer surface of the upper shoulder, and when the draw pin is raised the first interposer will engage an undersurface of the shoulder for preventing the pin from moving toward its lowered position, a second interposer connected to the first mine car and movable between inner and outer positions, means for urging the second interposer toward the outer position, the second interposer including a first arm positioned to engage the link connected to the second mine car when the link is in position to receive the draw pin for retaining the second interposer in the inner position, the second interposer being moved toward the outer position by the urging means when the link disengages from the first arm, a second arm positioned to engage an undersurface portion of the upper shoulder of the draw pin when the second interposer is in the outer position, and contact means for engaging a portion of the first interposer and moving it out of engagement with the undersurface of the upper shoulder when the second interposer moves to the outer position, the second arm being located below the portion of the first interposer which engages the shoulder undersurface so that when the first interposer is moved out of engagement with its corresponding undersurface portion the second arm will engage its corresponding undersurface portion and hold the pin in its raised position, the second arm moving out of engagement with its undersurface portion and allowing the pin to move to its lowered position when the link engages the first arm and causes the second interposer to move toward its inner position.

4,139,104

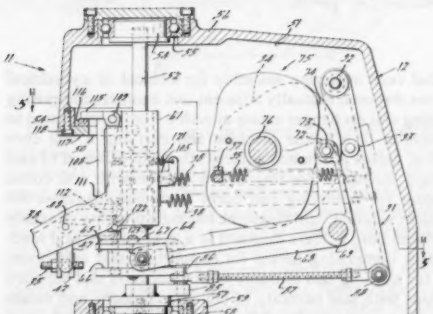
MATERIAL HANDLING APPARATUS

George Mink, 13130 Geoffrey, Warren, Mich. 48092

Continuation of Ser. No. 599,058, Jul. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,113, Sep. 16, 1974, Pat. No. 3,972,422, and Ser. No. 583,099, Jun. 2, 1975, Pat. No. 4,002,245. This application Jul. 25, 1977, Ser. No. 818,808

Int. Cl.[2] B65G *47/90*

U.S. Cl. 214—1 BB **3 Claims**



1. A material handling apparatus comprising an outer housing having spaced bearing means, a pair of members rotatably supported by said spaced bearing means, a pair of spaced rods affixed to said members and extending between said bearing means, a carriage having a pair of spaced bores receiving said rods for slidably supporting said carriage upon said rods, a driven cam shaft rotatably supported in said housing and spaced from said bearing means, a first cam affixed to said cam shaft, a bell crank having a pair of arms and being pivotally supported within said housing, said bell crank having first follower means carried by one arm thereof in engagement with said first cam for pivoting said bell crank upon rotation of said first cam, means providing a sliding connection between the other arm of said bell crank and said carriage for moving said carriage along said rods in response to pivotal movement of said bell crank, said sliding connection being operative to permit rotation of said carriage relative to said bell crank arm, a second cam affixed to said cam shaft, a lever pivotally supported in said housing, second follower means affixed to said lever and engaging said second cam for pivoting said lever upon rotation of said second cam, a crank operably connected to said rods for rotating said rods in said bearing means, a connecting rod connecting said lever with said crank for rotating said rods about the axis determined by said bearing means in response to pivotal movement of said lever and for rotating said carriage about said pivotal axis, gripping means carried by said carriage and movable in sequence therewith from a home position to a work position in response to rotation of said cam shaft through a complete cycle.

4,139,105

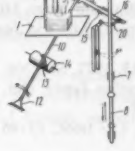
DEVICE FOR PIECE-BY-PIECE DELIVERY OF STORAGE-CELL ELECTRODES

Ivan A. Kolosov, ulitsa Astrakhanskaya, 118, kv. 54; Jury E. Ivanyatov, ulitsa M. Zatonskaya, 21, both of Saratov, and Mikhail M. Dychkin, ulitsa Lomonosova, 22, kv. 29, Engels Saratovskoi oblasti, all of U.S.S.R.

Filed Mar. 7, 1977, Ser. No. 774,732

Int. Cl.[2] B65G *59/04*

U.S. Cl. 214—8.5 D **4 Claims**



1. A device for piece-by-piece delivery of storage-cell electrodes and the like, comprising: a table adapted to support a stack of electrodes; a manipulator located close to said table and made as a swivel bar provided with a holder, and a gripper of said manipulator fixed in place at the end of said holder; a double-arm lever with rollers, said lever being locked in place substantially in the middle portion of said bar; a pushrod coaxial with said swivel bar and adapted to lift said bar and permit said bar to move down freely under the weight of said bar when not supported by said push/rod; a step-by-step conveyor; a link which is kinematically associated with said double-arm lever and said conveyor, said link having a recess arranged to engage one of said rollers of said double-arm lever during swivelling of said bar whereby upon actuation of said step-by-step conveyor said link rotates said bar causing movement of said gripper between positions over said stack and said conveyor.

4,139,106

DEVICE FOR EMPTYING A SILO, AND SILO CONSISTING OF SUCH A DEVICE

Adolphe A. Tartar, 139, rue Jean Jaures, Wizernes, France (62570)

Filed May 20, 1977, Ser. No. 799,075

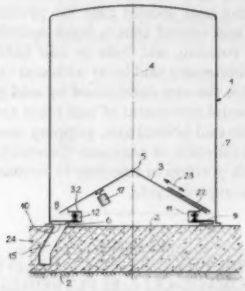
Claims priority, application France, May 24, 1976, 76 15612

Int. Cl.[2] B65G *65/42*

U.S. Cl. 214—17 D **12 Claims**

1. A device for emptying silaged particulate solids in a silo, comprising, a conical or pyrimidal deflector having its vertical axis through its upper point substantially identical with the vertical axis of the silo and having the periphery of its base

spaced inwardly from the interior side of the silo wall to define therebetween a horizontal annular corridor about said deflector and within said silo, an endless member within the silo and movable by drive means through a horizontal path adjacent



said annular corridor, and a plurality of scrapers projecting from said endless member and extending substantially completely across said annular corridor for moving the silaged solids along the corridor to a discharge passage intercepting and extending downwardly from the corridor.

4,139,107

SPREADER POSITIONING APPARATUS FOR AUTOMATICALLY GRASPING A HANDLING ARTICLE

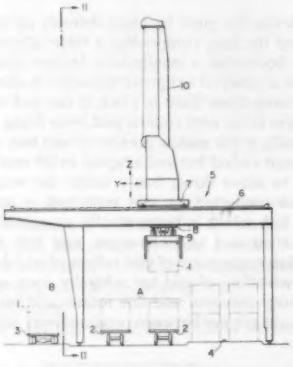
Yasumasa Ninomiya, Urawa; Yasuo Nabeshima, Kudamatsu; Kengo Sugiyama, Abiko, and Yozo Hibino, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Japanese National Railways, Japan

Filed Oct. 13, 1977, Ser. No. 841,922

Claims priority, application Japan, Oct. 20, 1976, 51-124810; Oct. 20, 1976, 51-124811

Int. Cl.[2] B66C *13/46*

U.S. Cl. 214—40 **7 Claims**



1. A spreader positioning apparatus for automatically grasping handling articles of a rectangular parallelepiped shape wherein said spreader is first positioned in the vertical direction (Z) and then is slightly moved in the travelling direction (X), in the transverse direction (Y), and in the angular direction (θ) about the center axis of the spreader so as to be accurately positioned with respect to one of such handling articles, to the loading bed of a freight car or a truck, such apparatus comprising:

a. detecting plates attached to the marginal portions of both sides of said handling articles and serving as targets for detection when a desired article is searched;

b. another detecting plates attached to the portions of the sides of the loading bed of freight cars or trucks carrying the articles thereon which portions register with the longitudinal edges of the handling articles, so that the detecting plates can serve as targets for detecting the position of the desired handling article on the bed;

c. a columnar member mounted on a trolley of a crane for vertical movement and supporting at its lower end said handling article grasping spreader through a fine adjustment device;

d. sensor arms connected to at least three of four corners of the spreader and adapted to be extended or contracted in the vertical direction;

e. sensor blocks each affixed to the lower end of said respective sensor arms; and

f. sensor mounted on said sensor blocks for detecting deflection of the spreader in the Z-direction, Y-direction, θ-direction and X-direction by using at least said detecting plates as targets for detection.

4,139,108

MAGAZINE ASSEMBLY FOR COIL CORES OR TUBES

Heinz Kamp, Rickelrath, and Hans Raasch, MönchenGladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., MönchenGladbach, Fed. Rep. of Germany

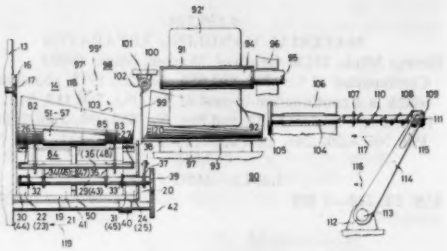
Continuation of Ser. No. 699,846, Jun. 25, 1976, abandoned.

This application Nov. 28, 1977, Ser. No. 858,281

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1975, 2528222

Int. Cl.[2] B65G *67/04*

U.S. Cl. 214—41 R **5 Claims**



1. Coil core magazine assembly for conical or cylindrical coil cores disposed mutually adjacent one another, comprising a traveling coil exchanger means movable from work station to work station of a textile machine and carrying a coil core magazine, means positioned adjacent the path of travel of said exchanger means for loading said magazine with coil cores, and means for removing coil cores from said magazine for subsequent winding, said magazine having a plurality of axially parallel coil core holders disposed in a given plane, said loading means comprising means for supporting said coil cores, means for aligning said plurality of coil cores on said supporting means with said plurality of coil core holders, and means for simultaneously axially sliding a plurality of said coil cores from said supporting means directly sideways onto said plurality of coil core holders, said magazine having a coil core feeding device operatively connected to said coil core holders for feeding the coil cores loaded in said coil core holders to said coil core removing means in a direction transverse to the axial direction of the coil cores.

4,139,109

LOAD LIFT ASSEMBLY FOR TRUCKS

Robert P. Murphy, 1809 Commercial St., St. Joseph, Mo. 64503

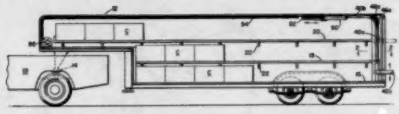
Filed Jul. 29, 1977, Ser. No. 820,224

Int. Cl.[2] B60P *1/46*

U.S. Cl. 214—75 R **6 Claims**

4. A lift assembly adapted for attachment along the side

walls of the access opening of a truck body, such as a low-load semi-trailer; and comprising a pair of tracks of channel formation with flanges directed toward one another defining a longitudinal opening; a pair of shoes, one to be assembled to the channel formation of each track and confined by said flanges for sliding movement, and each shoe including a lateral arm projecting through the longitudinal opening of its associated track; each said track and shoe assembly adapted for mounting



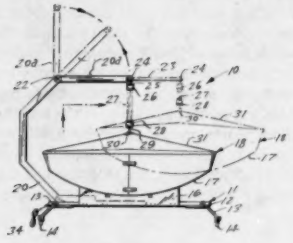
in mirror image by mounting means to opposite side walls of the access opening; cable means attached to each shoe for direction to a suitable source of power; and a pair of angled support elements with a first angle portion of each pair adapted for removable attachment to a corresponding shoe arm and with another angle portion projecting rearwardly in laterally spaced relation to one another for receiving articles to be loaded and unloaded through the access opening while providing attendant operating space therebetween.

4,139,110

BOAT LOADING AND UNLOADING DEVICE FOR AUTOMOTIVE VEHICLES

Herbert C. Roberts, Damascus, Dept. of State, Washington, D.C. 20520

Filed Apr. 20, 1977, Ser. No. 789,067
Int. Cl.² B60R *9/00*
U.S. Cl. 214—450 **4 Claims**



1. A boat loading and unloading device for automotive vehicles, comprising, in combination, a hollow rectangular and fixed frame mounted to a top of a vehicle, a pair of spaced-apart and contoured cradles secured to said fixed frame for removably receiving a hull of a boat, a movable frame and a pair of hinged lifting arms secured to said movable frame, each said lifting arm having a telescoping extension, the extensible portion of which carries a line and pulley means for raising and lowering said boat, and said movable frame comprising an inner frame of hollow rectangular configuration which is received within said fixed frame to move said boat to and away from a longitudinal axis of said vehicle.

4,139,111

MATERIALS HANDLING APPARATUS

Alton L. Fritz, 12121 N. 83rd Ave., Peoria, Ariz. 85345

Filed Oct. 3, 1977, Ser. No. 838,801
Int. Cl.² B66F *9/22*
U.S. Cl. 214—674 **12 Claims**

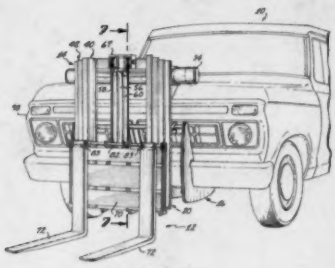
1. A material handling apparatus for demountable connection to the front end of an automotive road vehicle having a frame upon which the vehicles body is supported, said material handling apparatus comprising:

(a) a hanger bracket for attachment to the front end of the frame of the vehicle and configured to extend forwardly and upwardly in front of the vehicle;

(b) a forklift assembly having a vertically stationary frame member disposed in a substantially upright position;

(c) releasable clamp means mounted on the vertically stationary frame member of said forklift assembly for demountably pivotably connecting said forklift assembly to said hanger bracket at the upwardly and forwardly disposed end thereof;

(d) extensible power means mounted on the lower end of the vertically stationary frame member of said forklift assembly for demountable connection to said hanger bracket adjacent its point of attachment to the frame of the vehicle, said extensible power means actuatable to move said forklift assembly about its point of pivotal connection with said hanger bracket;



(e) load bearing means on said hanger bracket for supporting said forklift assembly when mounted on said hanger bracket; and

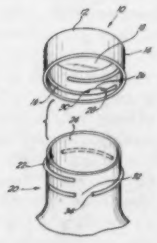
(f) means on the vertically stationary frame member of said forklift assembly for movably engaging said load bearing means when said forklift assembly is mounted on said hanger bracket.

4,139,112

SAFETY CLOSURE CAP

Carl W. Cooke, 233 Wilshire Blvd., Santa Monica, Calif. 90401

Filed Oct. 31, 1977, Ser. No. 846,767
Int. Cl.² B65D *85/56*
U.S. Cl. 215—217 **5 Claims**



1. A safety closure for sealing the open end of a threaded container, said safety closure comprising:

a single unit comprising a top portion defining an interior face, a resilient sealing member lining the interior face of said top portion and a depending cylindrical skirt portion;

a substantially continuous helical thread disposed on the inner wall of said depending skirt portion for cooperation with said container thread responsive to the rotation of said closure with respect to said container to draw said top portion of said closure against the open end of said con-

tainer compressing said resilient liner therebetween and sealing the open end of said container;

at least three locking means being equiangularly spaced about said closure thread for engagement with corresponding locking members on said container thread to prevent reverse rotation of said closure after it has been drawn into sealing relation on the container.

4,139,113

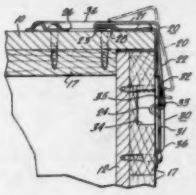
PANEL FASTENING DEVICE

Andrew S. Graham, Jr., Wyncote, Pa., assignor to Fleck Industries, Inc., Willow Grove, Pa.

Filed Jun. 7, 1976, Ser. No. 693,411

Int. Cl.[2] B65D *9/12*

U.S. Cl. 217—12 R **4 Claims**



1. A fastening system for securing panels angularly positioned adjacent one another and forming a joint, said system comprising a resilient spring clip, being prebent into two angularly disposed arms adapted to fit exteriorly of the joint, the bend angle between the arms being different from the angle of the panels forming the joint when the clip is unflexed, the arms being capable of flexing to positions in which the bend angle is substantially the same as the angle of the joint when the clip is flexed so that the clip fits around the joint, first plate means mounted on the exterior surface of one of said panels, said first plate means having a portion which is raised relative to the panel surface adjacent the joint, said raised portion defining a slot running parallel to the surface of the panel and having an opening for access to the slot offset from the joint edge, second plate means on the adjacent panel having a portion defining a clip retaining edge offset from the joint edge, said clip having the end of one arm provided with a 180° bend to form an elongated hook which runs parallel to the arm of the clip, said hook being adapted to enter the slot formed between the raised portion and the exterior surface of the panel through said opening, the hook forming end and the one arm being spaced apart relatively to the thickness of the raised portion and the hook being of a thickness relative to the slot to cause the hook and arm of the clip to interfit with the raised portion and the clip to be substantially non-movably retained in place relatively to the slot with the one arm extending substantially parallel to the surface of the first plate means as the panels are moved into position to be joined together, said clip having detent means projecting inwardly from the end of the other arm, said arm being held in the position in which the clip fits around the joint upon flexure thereof and the detent means resiliently interengages with said retaining edge on said second plate, said hook and slot further coacting to prevent accidental dislodgement of the clip during use of the container and during removal of the detent means from the retaining edge of the second plate.

4,139,114

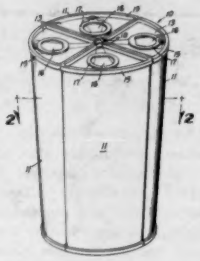
COMPOSITE CONTAINER HAVING A PLURALITY OF REMOVABLE SECTIONS

Elizabeth T. Long, and Leonard L. Long, both of 3573 Knollwood Dr., NW., Atlanta, Ga. 30305

Filed Mar. 23, 1977, Ser. No. 780,256

Int. Cl.[2] B65D *21/02*

U.S. Cl. 220—23.4 **6 Claims**



1. In a compartmented container for liquids and solids including a plurality of independent closed container sections, means separably joining said container sections in assembled relationship to form a unitized multi-compartment container and opening means on each container section allowing it to be opened independently of the other container sections, the unitized multi-compartment container being cylindrical and the container sections being wedge-like with each container section having a pair of flat converging radial walls and a circumferential wall, the improvement of the opening means of the container sections being on corresponding ends thereof and being radially disposed with the inner ends of the opening means extending near the axial center of the multi-compartment container, and separable means joining the inner ends of the opening means and thereby separably joining the container sections for selective removal of an independent closure container section, said separable means comprising a globule having separable joined wedge-like portions attached to said inner ends of the opening means whereby a selected independent section may be removed from the unitized multi-compartment container by pulling the section sidewise and separating it from the remaining portion of the separable globule.

4,139,115

CONTAINER WITH REINFORCING FRAME

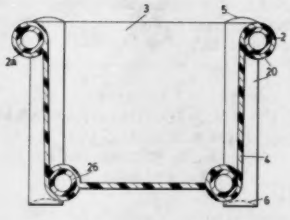
James D. Robinson, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 5, 1974, Ser. No. 495,037

Claims priority, application United Kingdom, Aug. 7, 1973, 37369/73

Int. Cl.[2] B65D *1/34*

U.S. Cl. 220—74 **6 Claims**



1. A rigid container having thermoplastics walls defining an interior space, said container comprising an open framework constructed of interconnected thermoplastics members of

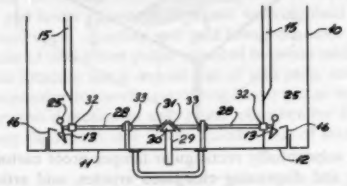
polyolefin material which together define the general locations of the planes of said walls, said walls being molded integrally with coating polyolefin material molded on to said members, said coatings at least substantially surrounding each of said members, the transverse dimensions of said members being substantially greater than the thickness of said coatings and said walls.

4,139,116

CABINET WITH TWO OR MORE DRAWERS

Jens E. B. Scavenius, Soterassen 10, DK-2840 Holte, Denmark

Filed Feb. 23, 1977, Ser. No. 771,404
Claims priority, application Denmark, Mar. 15, 1976, 1112/76
Int. Cl.² E05C *15/04*
U.S. Cl. 220—217 **12 Claims**



1. A cabinet comprising:

an enclosure having vertically adjacent openings for receiving drawers;

a plurality of drawers mounted to said enclosure for horizontal movement between open and closed positions

at least one vertical locking bar pivotably mounted to said enclosure along a side thereof adjacent said openings; said locking bar having at least one eccentric portion extending outward from the pivot axis and extending in the axial direction substantially the entire locking bar length, said locking bar thereby being of a substantially uniform cross section with respect to which the pivot axis is eccentrically located, and said locking bar being rotatable about said pivot axis between a locking position and a release position;

at least one cam rail mounted to the side of each drawer facing said locking bar, said cam rail being arranged to engage and rotate said locking bar into said locking position on movement of any one of said drawers to its open position;

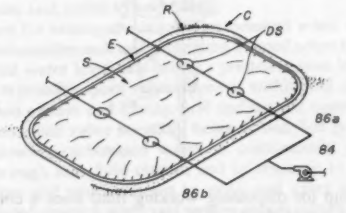
and, at least one retaining hook mounted to each drawer for engaging said locking bar when said locking bar is in said locking position and said drawer is closed.

4,139,117

FLOATING COVER ASSEMBLY

Howard S. Dial, 601 Jefferson, Houston, Tex. 77002

Filed Sep. 30, 1976, Ser. No. 728,139
Int. Cl.² B65D *87/18*; E04H *3/16*
U.S. Cl. 220—218 **21 Claims**



1. A floating cover assembly for a liquid storage reservoir where the surface level of the stored liquid varies, said assembly comprising:

a sheet of flexible material having a marginal edge, said sheet being impervious to the liquid stored in the reservoir and floatable on the surface of the stored liquid for preventing contamination of the stored liquid; and

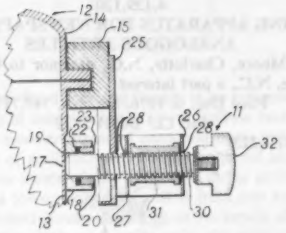
envelope means attached to the marginal edges of said sheet, means for securing said envelope means to the berm of said reservoir, said envelope means adapted to be filled with a regulated amount of a compressible fluid to tension said sheet sufficiently to eliminate wrinkles in said floating flexible sheet as the surface of the level-varying liquid stored in the reservoir changes level relative to the berm of said reservoir.

4,139,118

PRESSURE VESSEL SAFETY INTERLOCK

Ernest P. Parker, Lowell, Mass., assignor to Erect Pro, Inc., Spartanburg, S.C.

Filed Sep. 20, 1977, Ser. No. 830,158
Int. Cl.² B65D *45/00*
U.S. Cl. 220—316 **11 Claims**



1. A safety interlock for a pressure vessel having a shell portion, a door portion and an aperture in one of said portions to be sealed off by a shear bolt, said interlock including a collar affixed to the outside of said pressure vessel circumferentially surrounding the pressure vessel aperture and projecting outwardly therefrom, said collar having a bore therethrough with an enlarged circumferential section extending partway toward said pressure vessel aperture, a resilient ring seal disposed within said enlarged section of said bore, a guide bushing positioned within said enlarged section of said bore in contact with said seal for aligning said shear bolt, a support bracket affixed to another portion of said pressure vessel, said support bracket having an aperture linearly alignable with and spaced from said collar and said pressure vessel aperture, said shear bolt movably carried by said support bracket, and means for advancing said shear bolt linearly toward and away from said pressure vessel aperture through said guide bushing, ring seal and collar into contact with said pressure vessel aperture when said bolt is aligned therewith to selectively maintain a pressure within said vessel.

4,139,119

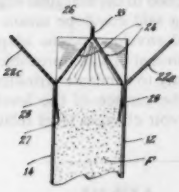
SIFT PROOF CARTON

Edwin C. McLaren, Apple Valley, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,353
Int. Cl.² B65D *5/56*
U.S. Cl. 220—418 **4 Claims**

1. A sift proof carton comprising: a front wall, a rear wall, and opposed side walls connected to said front and rear walls, a top wall connected to said side walls, a bottom wall connected to said side walls, an upper liner member adhesively connected intermediate its top edge and bottom edge to the front, rear and side walls of the carton such that the top and bottom edges of said upper liner member are free from said carton, the bottom edge of said upper liner member being

movable towards the inner portion of the carton to inhibit shifting of material contained in the carton, a lower liner member adhesively connected intermediate its top edge and bottom edge to the front, rear and side walls of the carton such that the top and bottom edges of said lower liner member are free from



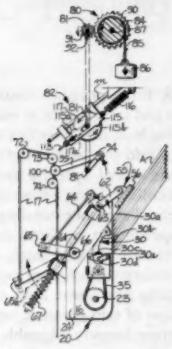
said carton, the top edge of said lower liner member being movable towards the interior portion of the carton to inhibit shifting of material contained in the carton, the lower edge of said lower liner member being sealed together, and the upper edge of said upper liner members being sealed together.

4,139,120

VENDING APPARATUS FOR NEWSPAPERS AND ANALOGOUS ARTICLES

Harry O. Moore, Charlotte, N.C., assignor to Chris Combis, Charlotte, N.C., a part interest

Filed Dec. 6, 1976, Ser. No. 747,717
Int. Cl.[2] B65H 3/22
U.S. Cl. 221—213 **7 Claims**



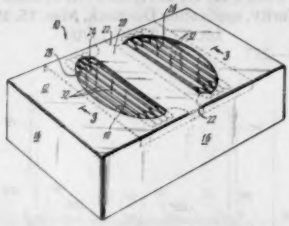
1. Apparatus for dispensing articles, such as newspapers, magazines and the like, comprising means for supporting a substantially vertical stack of the articles with the articles inclined downwardly and forwardly, article hold-back means positioned alongside said supporting means and adapted to engage and extend across corresponding forward edges of the articles in the stack to restrain the same from forward sliding movement from the stack, carriage means mounted for substantially vertical movement alongside the forward edges of the stack of articles and being operatively connected to said article hold-back means and adapted to move downwardly upon each successive uppermost article being dispensed from the stack, stack height sensing means carried by said carriage means and including a presser member adapted to engage and rest upon successive uppermost articles in the stack and serving for in turn restraining the carriage means against downward movement, and article discharge means carried by said carriage means for engaging the uppermost article in the stack and for slidingly moving the uppermost article rearwardly a predetermined distance out of engagement with said presser member so as to permit said presser member to drop downwardly onto the next article to be dispensed and thereby effect a lowering of said carriage means to gravitationally dispense the uppermost article from the stack over the presser member.

4,139,121

TAMPER-PROOF DISPENSING CARTON

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 27, 1977, Ser. No. 801,147
Int. Cl.[2] B65D 83/02, 85/20
U.S. Cl. 221—302 **1 Claim**



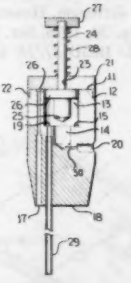
1. A substantially rectangular tamper-proof carton for containing and dispensing elongated articles, said articles being disposed perpendicular to the lengthwise dimension of the carton, said carton comprising top, bottom, and sidewall panel members, said top panel including a first semi-elliptical opening having a length less than that of said elongated articles, the lengthwise dimension of said first semi-elliptical opening being disposed perpendicular to the length of the carton; said top panel further including a second semi-elliptical opening having a length less than that of said elongated articles, the lengthwise dimension of said second semi-elliptical opening being disposed perpendicular to the length of the carton; a substantially rectangular strip member disposed between said first and second openings, and having its lengthwise dimension perpendicular to the length of the carton, the central portion of said strip member having a length greater than that of said elongated articles; and a sheet of transparent film secured to the inner surface of said top panel, said film being formed of two overlapping segments, each film segment covering one of said semi-elliptical openings, said film segments overlapping along a seam disposed immediately below said strip member.

4,139,122

DISPENSING PUMP HAVING NO CHECK VALVES

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed Apr. 29, 1977, Ser. No. 792,262
Int. Cl.[2] B67D 5/42
U.S. Cl. 222—1 **22 Claims**



1. A pump for dispensing working fluid from a container without the use of check valves comprising;

a body member;

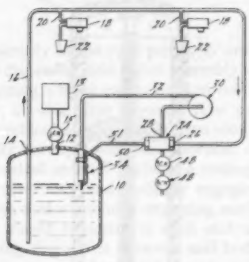
upper and lower chambers defined in said body member;
upper and lower mechanically-joined piston members movable together in said upper and lower chambers, respectively, through a limited travel path;
means for aspirating working fluid from said container into said upper chamber in response to movement of said upper piston member in a first direction along said path;
means for aspirating air into said lower chamber in response to movement of said lower piston member in said first direction along said path;
means for providing pressure isolation between said upper and lower chambers for all positions of said lower piston member between one end of said path and an intermediate location along said path, wherein piston movement from said one end toward said intermediate location corresponds to movement in said first direction;
means for providing fluid communication between said upper and lower chambers to permit working fluid to fall from said upper chamber into said lower chamber for all positions of said lower piston member between said intermediate location and a second end of said path; and
means responsive to movement of said lower piston member in a second direction in said lower chamber for forcing working fluid from said lower chamber out of said body member.

4,139,123

SINGLE PUMP RECIRCULATING CARBONATOR

Herman B. Castillo, Clawson, Mich., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Apr. 4, 1977, Ser. No. 784,224
Int. Cl.[2] B67D *5/56*
U.S. Cl. 222—56 **5 Claims**



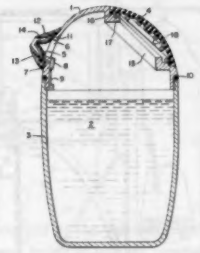
1. A carbonation system suitable for carbonating water and mixing said carbonated water with a syrup to provide a carbonated beverage comprising:
a carbonation tank having an outlet and an inlet;
a closed loop fluid circuit connecting the outlet and the inlet of the carbonation tank;
dispensing means operative to withdraw carbonated water from said closed loop fluid circuit and mix said carbonated water with a beverage syrup;
pumping means located within the closed loop fluid circuit and operative to continuously pump carbonated water from said outlet to said inlet;
means for sensing the level of carbonated water within the carbonation tank and generating a signal when the carbonated water level falls below a predetermined level;
a two-position spool valve disposed within said closed loop fluid system and having first and second operating positions, said valve normally being in said first position and allowing carbonated water to continuously recirculate through said fluid circuit, and in response to the signal from said sensing means to move said valve to a second closed position when said sensing means signals a depleted supply of carbonated water, the valve operating to admit a supply of fresh water to the conduit between the dispensing means and the carbonation tank while temporarily restricting the flow of carbonated water; and
a source of carbon dioxide operative to furnish carbon dioxide to the carbonation chamber at an elevated pressure.

4,139,124

LIQUID DISPENSING CONTAINER

Jose Ferrante, 9 de Julio 1025, Bernal, Argentina

Filed May 12, 1977, Ser. No. 796,351
Claims priority, application Argentina, May 17, 1976, 263305
Int. Cl.[2] B67D *1/16*
U.S. Cl. 222—110 **8 Claims**



1. A container for dispensing liquids in an intermittent manner comprising in combination, a lower hollow body containing the liquid, a cover threaded onto said body and including a wall portion of resiliently deformable material and deformable towards the inside of said body, said cover provided with an upper and a lower orifice separated from one another and located at different levels, a conduit of resiliently deformable material including inlet and outlet ends, the inlet end of said conduit affixed to said cover and surrounding said upper orifice, the outlet end of said conduit projecting outwardly from the cover to provide a spout for the liquid being dispensed, said outlet end of the conduit normally being in a closed position, said conduit being opened to discharge liquid in response to pressure from inside the container produced by manual pressure against said resiliently deformable wall portion of the cover, a nozzle surrounding at least part of said conduit and defining a space for collecting liquid dripping from the outlet end of the conduit after discharge of liquid therefrom, said lower orifice located in the bottom of said space between said nozzle and conduit and connecting said space with the inside of the container, a valve member inside of said container for covering and uncovering said lower orifice, said valve member comprising a spring arm connected at one end to the inner surface of the container, the other end of said spring arm being free, a pad mounted on said free end, said spring arm normally urging said pad to cover said lower orifice whereby outside pressure greater than the pressure inside the container causes said pad to uncover said orifice, to thus permit the passage of liquid collected in said space together with ambient air into the interior of the container.

4,139,125

RECONSTITUTED FOOD DISPENSER

William A. Arzberger, Medfield, and Edward J. La Lumiere, Woburn, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Continuation of Ser. No. 659,021, Feb. 18, 1976, abandoned.
This application Aug. 19, 1977, Ser. No. 826,071
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—129.4 **2 Claims**

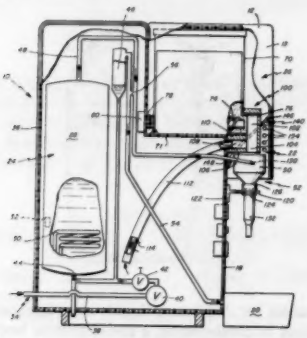
2. A food dispenser comprising,
a housing,
a platform on the housing and a food container mounted on the platform,
a discharge opening forming part of the container,

a cover formed of highly heat conductive metal mounted on the discharge opening and having a first passage therein in communication with the opening as a continuation thereof, said passage having a discharge port,

a second passage in the cover in communication with the first passage,

a hot air tube in the housing and having a discharge end connected to the second passage in the cover for directing hot air into the cover,

a funnel mounted on the housing having an enlarged inlet chamber disposed immediately below the discharge port and a discharge tube extending downwardly from the chamber,



a hot water tube in the housing having a discharge end connected to the funnel inlet chamber,

means removably mounting both the cover and funnel on the housing to permit quick access to said cover and funnel for ease of cleaning,

a hood attached to the housing and covering the food container,

means including a hot water tank in the housing for feeding hot water to the hot water tube,

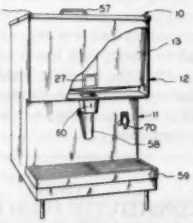
and a baffle under the hood for preventing steam from rising from the funnel inlet chamber about the container.

4,139,126

REFILLABLE ICE DISPENSING APPARATUS

Fred C. Krasner, Lincolnwood; Milton M. Graupe, Skokie, and Kenneth W. Zeuschner, Morton Grove, all of Ill., assignors to Lern, Inc., Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,518
Int. Cl.² B65G 65/48
U.S. Cl. 222—146 C **13 Claims**



1. A refillable ice dispensing apparatus for automatically vending ice in substantially chunk form, said apparatus comprising:

ice storage bin means having a substantially oblong shape,

said ice storage bin means substantially enclosing said stored ice and insulating said stored ice so as to prevent melting thereof;

agitator means adjacent the bottom interior surface of said storage bin means for directing a quantity of said ice rotatably about the bottom of said storage bin;

agitator motor means outside said storage bin means for powering said agitator means in a rotating fashion within said storage bin means;

bin aperture means adjacent the interior bottom of said storage bin proximate to said agitator means, through which said ice may be released from said storage bin as prompted thereto by said rotating action of said agitator means,

said agitator means being located within said ice storage bin means in an offset position so as to create a substantially greater space between said agitator means and said bin aperture means than the space between said agitator means and said ice storage bin means at a position opposite to said bin aperture means,

said agitator means cooperating with said greater spacing proximate to said bin aperture to accumulate said quantity of ice at said space for release through said bin aperture means;

dispensing gate means proximate said bin aperture means for alternatively opening and closing said bin aperture means for release, and non-release respectively of said ice from said ice storage bin means;

apparatus switching means for activating said agitator motor means and said dispensing gate means for dispensing of said ice; and

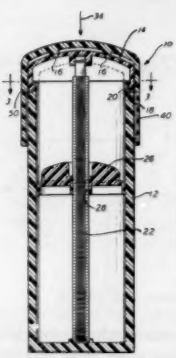
cabinet means enclosing said ice storage bin means, and said agitator means in an upper cabinet portion.

4,139,127

PLUNGER-TYPE DISPENSER WITH RATCHET ACTUATOR

Charles J. Gentile, North Caldwell, N.J., assignor to Orange Products, Inc., Chatham, N.J.

Filed Dec. 16, 1976, Ser. No. 751,126
Int. Cl.² B65D 5/42
U.S. Cl. 222—390 **3 Claims**



1. In a dispenser including a container and a rotatable member and wherein relative rotation of said rotatable member with respect to said container in a predetermined direction of relative rotation causes dispensing of dispensable material contained in the container, and wherein relative rotation of said rotatable member with respect to said container in the opposite direction to said predetermined direction of relative rotation does not cause dispensing of said dispensable material, said container having a vertical axis the improvement comprising:

a resilient pawl provided on one of said rotatable member or said container,

a ratchet provided on the other of said rotatable member or said container, said ratchet defined by a plurality of annularly arranged teeth having slots therebetween and said teeth being of a predetermined height and spaced apart a predetermined arcuate distance,

said pawl being inclined at a predetermined angle with respect to said vertical axis of said container and being bendable limitedly in said direction of inclination and said pawl engaging said ratchet with the upper end of said pawl extending into said ratchet slots,

upon said relative rotation of said rotatable member with respect to said container in said predetermined direction of relative rotation said teeth and said pawl rotate freely with respect to each other with said teeth bending said pawl limitedly in said direction of inclination thereby allowing limitless relative rotation of said rotatable member with respect to said container in said predetermined direction of relative rotation, and

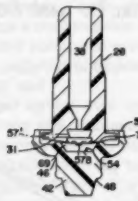
upon said relative rotation of said rotatable member with respect to said container in said opposite direction of relative rotation said teeth engage said pawl and said pawl is wedged between the two adjacent teeth in which said pawl resides at the initial relative rotation of said rotatable member with respect to said container in said opposite direction thereby limiting relative rotation in said opposite direction determined by said predetermined height of said teeth and said predetermined arcuate spacing between said teeth.

4,139,128

VARIABLE SPRAY VALVE ASSEMBLY

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Co., a Division of Pittway Corporation, Cary, Ill.

Filed Jun. 10, 1976, Ser. No. 694,722
Int. Cl.[2] B05B *1/32*
U.S. Cl. 222—402.17 **9 Claims**



1. A valve assembly of the type primarily designed for use with an aerosol dispenser, said valve assembly comprising: a valve body including a body cavity defined on the interior of said valve body, a valve stem having a flow passage on the interior thereof and including a base portion movably disposed within said body cavity, said base portion comprising a substantially spherical exterior surface, a sealing gasket connected to said valve body and sealingly engaging said valve stem, a valve stem sealer movably engaging said base portion and disposed in biased engagement with said sealing gasket and in fluid sealing disposition between said body cavity and said interior flow passage of said valve stem, said valve stem sealer comprising a platform including an annular surface projecting upwardly from said platform for sealing engagement with said substantially spherical surface of said base portion, metering port means disposed in fluid communicating relation between said interior flow passage and the exterior of said valve stem within said body cavity, said valve stem movably interconnected to said sealing gasket with said base portion being movably disposed on said valve stem sealer to provide an angular or flush relation between mating portions of said base portion and said valve stem sealer, whereby the rate of aerosol product flow from the dispenser is dependent upon relative orientation between said base portion and said valve stem sealer.

4,139,129

CONTAINER WITH NESTABLE POURING SPOUT

Walter K. Chlystun, 327 St. James Dr., Spartanburg, S.C. 29301

Continuation-in-part of Ser. No. 638,618, Dec. 8, 1975, Pat. No. 4,027,811. This application Sep. 23, 1976, Ser. No. 725,933
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—529 **4 Claims**

1. A dispensing container comprising:

(a) a container body;

(b) a collapsible dispensing spout secured to said body and being nestable within said container;

(c) a cover of unitary construction with a top of said spout to initially seal said spout, said cover including spout withdrawal means of unitary construction therewith and extending outwardly therefrom in a direction generally transverse to said spout in a withdrawn position, said spout and said cover having a weakened tear area located at the junction therebetween and extending only partially around said spout;

(d) hinge means located at the junction between said spout and said cover and being of unitary construction with said cover and said spout, said weakened tear area extending around said spout to said hinge means; and

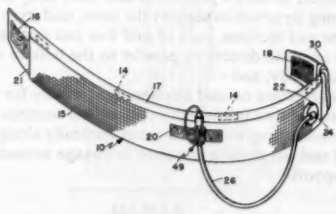
(e) vent producing means secured between an underside of said withdrawal means and a side wall of said spout.

4,139,130

CANTEEN BELT

Peter D. Glusker, 606 Nautilus St., La Jolla, Calif. 92037; Walter C. Fontana, 1523 Via Madrina, San Diego, Calif. 92111, and Mitchell L. Feingold, 602 Nautilus St., La Jolla, Calif. 92037

Filed Mar. 6, 1978, Ser. No. 883,410
Int. Cl.[2] A45C *1/04*
U.S. Cl. 224—5 W **4 Claims**



1. A canteen belt permitting a runner to obtain a drink of water or liquid unassisted and on demand without change of pace or stride comprising:

a supple support belt with an exterior mounting pad and containing an envelope-shaped pocket formed by sides of said support belt and provided with an access opening,

means for fastening and adjusting said support for an expandable fit about the waist of the runner,

a flat flexible and elongated water storage pouch provided with a fill and suction connection opening in one side and supported within said support belt pocket and compressible against the wearer by the expandable fit of said support belt, the interior opposite sides of said water storage pouch being joined together at a plurality of points along its centerline length to maintain a thin cross section for even water distribution within said water pouch,

a cylindrical water reservoir attached to said water pouch at said fill and suction opening and extending through the access opening in said support belt pocket when said water storage pouch is fitted therein,

a fill cap sealing said water reservoir and containing a central aperture,

a check valve mounted in said central aperture of said fill cap permitting uni-directional flow from said water pouch through inlet and outlet chambers of said check valve,

a flexible suction tube one end of which is connected to said check valve outlet chamber and of appropriate length to reach the mouth of the runner,

a cylindrical mouthpiece connected to the second end of said suction tube allowing the runner to suck water from the tube with his mouth,

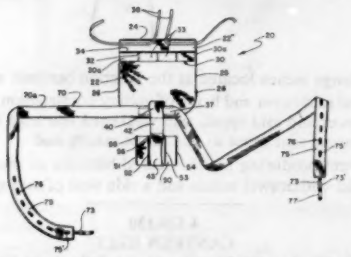
means for attaching said mouthpiece and suction tube to said support belt mounting pad for their ready availability.

4,139,131

CHILD CARRIER HAVING ENVELOPING STRUCTURE AND SUSPENSION STRAP

Sandra J. Hathaway, 303 Kohr Rd., Kings Park, N.Y. 11754

Filed May 31, 1977, Ser. No. 801,538
Int. Cl.[2] A63G *9/00*
U.S. Cl. 224—6 **12 Claims**



1. A child carrier, comprising:

an enveloping structure defining a pocket with an open top, closed sides, and a partially closed bottom, to receive, surround, support and secure the body of a child, said enveloping structure having a back body, a crotch piece and a front body;

one long suspension strap attached at a central section thereof to only a portion of said back body of said enveloping structure to support the same, said strap having two free end sections, each of said free end sections extending in opposite directions parallel to the bottom edge of said back body; and

passage means on said enveloping structure for providing a passage through which said free end sections of said suspension strap may be directed vertically along the outside of said enveloping structure to engage around an external support.

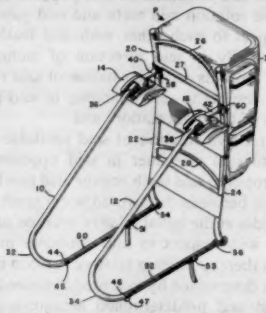
4,139,132

BACKPACK LEVERS

William A. Fairchild, Jr., Boulder, Colo., assignor to Martha S. Fairchild, trustee, Boulder, Colo.

Filed Mar. 31, 1977, Ser. No. 783,320
Int. Cl.[2] A45F *3/00*
U.S. Cl. 224—25 A **10 Claims**

1. In a backpack for transporting cargo on a person's back having a frame adapted to be releasably secured to the back and shoulders of a person and having a load-carrying component attached to said frame, the improvement comprising a pair of rigid levers, each of which is pivotally attached to said frame for pivotal movement about a horizontal axis and being spaced apart a sufficient distance to be positioned on opposite of a person's shoulders with the person's head positioned between said levers, each of said levers extending forwardly of said frame to a first point above a respective one of said shoulders and then outwardly and downwardly from said shoulder in spaced relation to said person to a distal end located at a second point forward of said shoulders, the distance between said first and second points being greater than the distance between said first point and said frame, said shoulders forming a fulcrum about which said levers may be pivoted when a downward force is applied on said lever near said second point



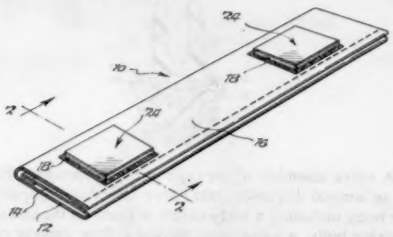
to apply an upward force on said frame at the point of pivotal connection of said lever to said frame and diminish horizontal forces acting on said shoulders.

4,139,133

MONEY BELT

Raymond R. Repka, S. #7 Carefree La., Cheektowaga, N.Y. 14227

Filed Jul. 11, 1977, Ser. No. 814,179
Int. Cl.[2] A45C *1/04*
U.S. Cl. 224—26 C **2 Claims**



1. A detachable enclosure, for receiving money and the like, adapted to be used in combination with an article of wearing apparel, said enclosure comprising a base panel having a pair of spaced side edges,

a mounting panel, said mounting panel being attached along one of said side edges of said base panel whereby said base panel may be folded into juxtaposed position with respect to said mounting panel, said mounting panel comprising a plurality of apertures therein,

a locking flap attached along the other of said side edges of said base panel whereby said locking flap may be folded into juxtaposed position with respect to said base panel so as to be disposed intermediate to said base panel and said mounting panel when said base panel is folded into juxtaposed position with respect to said mounting panel so that money and the like may be enclosed between said locking flap and said base panel,

first fastening means operably disposed between said mounting panel and said locking flap for retaining one to the other, said first fastening means comprising a hooked fabric or wooly material,

second fastening means operably associated with said mounting panel for retaining said mounting panel on an article of wearing apparel, said second fastening means including adhesive means on one side thereof for affixation of said second fastening means to an article of wearing apparel and on the opposite side thereof a hooked fabric when said first fastening means comprises a woolly material and a woolly material when said first fastening means comprises a hooked fabric,

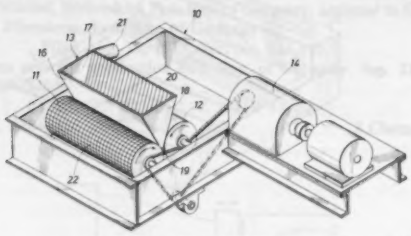
said second fastening means being arranged within said apertures to cooperatively engage said first fastening means so as to maintain said enclosure in folded position.

4,139,134

APPARATUS FOR PRODUCING CATALYST PELLETS OF UNIFORM SIZE

Charles G. Collins, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 621,710, Oct. 14, 1975, abandoned. This application Mar. 10, 1977, Ser. No. 776,340
Int. Cl.[2] B26F *3/00*
U.S. Cl. 225—97 5 Claims



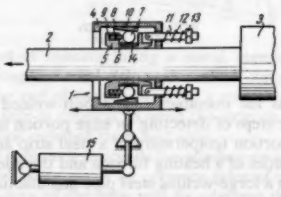
1. An apparatus for producing catalyst pellets of uniform size from brittle catalyst longs comprising
1. a frame
2. two revolvable cylindrical rolls attached to said frame wherein one roll has a compressible surface and the other roll has a convoluted surface of preselected dimensions,
3. means for driving said rolls in opposite directions to form a nip therebetween, and
4. an open top hopper having two opposing sides sloping inwardly from the top and terminating at the bottom in a slit, said open top hopper being positioned over the rollers so that the slit is parallel with the nip, said slit having an effective width slightly larger than the diameter of the longs whereby the catalyst longs can pass through the slit without binding and a length equal to or less than the length of the nip, an inward surface of the sloping side having grooves starting at the top and terminating at the slit, the grooves being parallel to each other, spaced apart a distance slightly more than the diameter of the longs, and perpendicular to the line made by the nip.

4,139,135

CONTINUOUS CASTING WITHDRAWAL APPARATUS

Vitaly N. Krupenik, ulitsa Darvina, 12, kv. 16; Vladimir I. Sosnenko, prospekt Moskovsky, 238a, kv. 15; Vladimir T. Sladkoshteev, ulitsa Dzerzhinskogo, 34, kv. 11; Oleg A. Shatagin, ulitsa Melnikova, 47, kv. 9, all of Kharkov; Anatoly I. Manokhin, 2 Schipovsky pereulok, 8, kv. 24, Moscow; Anatoly G. Sitnov, ulitsa Metallurgov, 80a, kv. 42, Tula; Vladimir N. Ordinartsev, ulitsa Stoletova, 5, kv. 1, Tula; Raisa P. Korotina, ulitsa Kutuzova, 138, kv. 6, Tula, and Valery P. Druzhinin, ulitsa Martenovskaya, 5, kv. 10, Tula, all of U.S.S.R.

Filed Dec. 27, 1976, Ser. No. 754,437
Int. Cl.[2] B65H *17/36*
U.S. Cl. 226—166 5 Claims



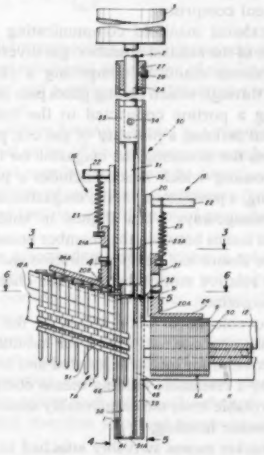
1. A continuous casting withdrawal apparatus, comprising: a housing formed with openings in its walls through which a casting being withdrawn passes, said housing being mounted for reciprocating movement along the axis of said casting in the direction of its withdrawal and then back to its initial position; shoes mounted within said housing and movable along the axis of the casting, said shoes being externally shaped so as to correspond to the casting profile; wedge blocks mounted within said housing and off-set from the shoes in a direction away from the axis of the casting withdrawal, said wedge blocks being inclined in said direction of withdrawal; rollers arranged in an interspace between said shoes and wedge blocks, said rollers being locked into position between said shoes and wedge blocks when the housing travels in the direction of the casting withdrawal, said rollers being unlocked on the housing's return travel to said initial position; a spring means to connect said shoes with the housing producing a force acting along the axis of the casting and in a direction opposite to the casting's withdrawal movement; and a driving means for moving the housing in the direction of the casting withdrawal and then back to said initial position.

4,139,136

NAIL DRIVER

Joseph R. Catalano, 695 Liberty St., Rockland, Mass. 02370

Filed Jul. 25, 1977, Ser. No. 818,830
Int. Cl.[2] B25C *1/02*
U.S. Cl. 227—109 5 Claims



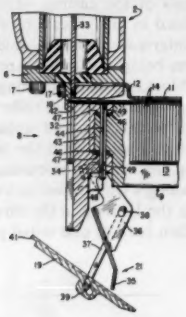
1. A nail driver comprising
a hollow elongated tube having at least one chamber for receiving and holding a nail,
a slot formed in the chamber wall parallel to the axis of the chamber for introducing nails into the chamber,
a driving rod movable along the axis of said tube and having an impacting end adapted to drive the nail,
a weighted handle secured to the end of said rod opposite the impacting end,
means independent of the position of said driving rod for mechanically feeding nails into said chamber
said means for feeding nails including:
at least one spring-loaded magazine adapted for holding a nail clip, and
a means for releasing one nail at a time from said magazine through said slot into said chamber.

4,139,137

FASTENER DRIVING TOOL

Harish C. Gupta, 3841 Bellaire Dr., Downers Grove, Ill. 60515

Filed Jan. 11, 1977, Ser. No. 758,493
Int. Cl.[2] B25C *1/06*
U.S. Cl. 227—123 **4 Claims**



1. In a pneumatic fastener driving tool having a tool housing, a pneumatic exhaust chamber into which spent gases are discharged, a driving chamber housing for holding a fastener in alignment with the driving blade and a magazine for sequentially supplying fasteners to the driving chamber housing, the improvement comprising

(a) an exhaust manifold communicating with and downstream of the exhaust chamber, gas diverting means within the exhaust manifold comprising a plurality circuitous paths through which exiting gases pass and a retainer plate having a portion connected to the tool housing and a portion defining a plurality of gas exit ports;

(b) means for mounting the magazine on the driving chamber housing which means includes a passageway in the housing, a passageway in the magazine, a pin positioned in the passageways when aligned in tandem, and resilient gasket means between the chamber housing and the magazine to absorb and dampen vibration and forces tending to cause relative motion between the chamber housing and the magazine;

(c) removable cover door means on the driving chamber housing opposite said means for mounting the magazine, said cover door means supported and held in closed position by a releasable holding means comprising

(i) pivotable lever means pivotably mounted in the driving chamber housing;

(ii) bracket means swivably attached to the cover means and to the pivotable lever means

the lever means and bracket means being so proportioned so that as the lever means is rotated in one direction the cover means is removed and when rotated in the other direction the cover means is brought into its closed position and as the lever means is further so rotated the bracket means is moved past the pivot point of lever means to tension the cover means in the closed position; and

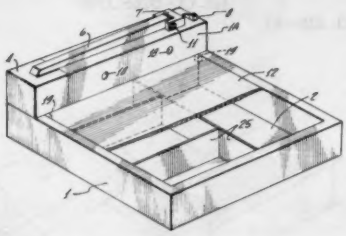
(d) means for positioning the magazine at a plurality of angles to the tool housing comprising readily removable connectors mounting the driving chamber housing to the tool housing said connectors being positioned symmetrically about two tool housings for alignment between the driving chamber housing and the tool housing so that the chamber housing and the tool housing can be attached at a plurality of angles to one another.

4,139,138

SOLDER TRAY

Charles W. Besselman, Jr., 13625 Halcourt, Norwalk, Calif. 90650

Filed Apr. 7, 1977, Ser. No. 785,369
Int. Cl.[2] B25H *3/06, 1/10*
U.S. Cl. 228—57 **3 Claims**



1. A work station apparatus comprising:

a first frame member including a tray-like base having an outer wall, a bottom member jointed to said outer wall, a plurality of partition divided sections defined in said frame member for storing various tools and elements to be utilized at said work station, and removable cover means, having heat resistance to soldering operations, for providing a work base for soldering operations, and for covering at least a portion of said sections;

a second frame member mounted on top of and at one end of said first frame member including light source means pivotally mounted with respect to said second frame member whereby light can be applied to any portion of said cover means, a plurality of holding means for holding apparatus to be worked upon at said work station and;

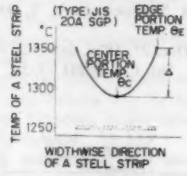
a plurality of apertures for receiving said holding means, said holding means including a fitting member insertable into said apertures, a flexible shape retaining member attached at one end to said fitting member, and clip means joined to the other end of said shape retaining member for controlling the position of said apparatus to be worked upon.

4,139,139

PROCESS FOR MANUFACTURING BUTT-WELDED STEEL PIPE

Nobuaki Hiraoka, and Syuji Matumoto, both of Amagasaki, Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1977, Ser. No. 856,814
Claims priority, application Japan, Dec. 12, 1976, 51-148911
Int. Cl.[2] B23K *31/06*
U.S. Cl. 228—102 **3 Claims**



1. A process for manufacturing a butt-welded steel pipe comprising the steps of detecting an edge portion temperature and a center portion temperature of a steel strip at a location between the outlet of a heating furnace and the inlet of a butt-welding mill in a forge-welded steel pipe manufacturing equipment, controlling the heating condition in the heating furnace in accordance with the difference between the edge portion temperature and a target edge portion temperature, and con-

trolling the transporting speed of the steel strip in accordance with the difference between the difference in the detected edge portion temperature and the center portion temperature and a target difference between the edge portion temperature and the center portion temperature.

4,139,140

METHOD FOR PRODUCING AN ELECTRICAL CONTACT ELEMENT

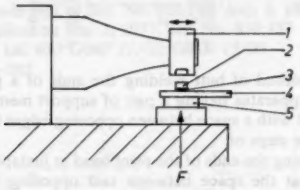
Dieter Stöckel, Birkenfeld, Fed. Rep. of Germany, assignor to G. Rau, Pforzheim, Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 826,193

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642338

Int. Cl.² B23K *21.02;* H01R *43/02*

U.S. Cl. 228—110 **3 Claims**



1. A method for producing a contact element of the type including at least one contact piece joined to a carrier, said method comprising:

positioning a layer of cold-weldable metal powder between said contact piece and said carrier; and

applying pressure between said contact piece and said carrier while applying thereto sonic welding at a frequency of approximately from 50 Hz to 20 kHz, thereby welding said contact piece to said carrier with said metal powder therebetween as an intermediate layer.

4,139,141

METHOD AND APPARATUS FOR MANUFACTURE OF SPIRALS WITHOUT AXLE

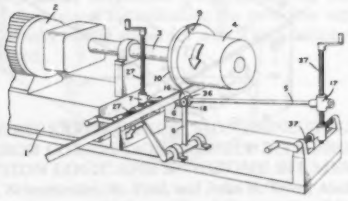
Olle Tornegärd, Malmö, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmö, Sweden

Filed Jun. 27, 1977, Ser. No. 809,983

Claims priority, application Sweden, Jun. 30, 1976, 7607444

Int. Cl.² B21D *11/06;* B23K *31/02*

U.S. Cl. 228—173 R **10 Claims**



1. A method of manufacturing a spiral member by cold working an elongated steel strip said method comprising

attaching one end of the steel strip to a rotatable axle,

driving the axle in rotation to wind the strip on the axle to form a spiral member from said strip,

guiding said strip, as it proceeds for winding on said axle, by two spaced guide plates on opposite sides of the strip, so that each turn of the strip will lie adjacent the previous turn,

adjusting the position of the guide plates with respect to the winding of the strip along a line which forms an angle with respect to the axis of rotation of the axle, and

drawing the formed spiral member axially to a predetermined length.

4,139,142

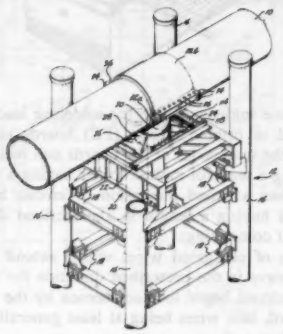
ABOVEGROUND ANCHOR SUPPORT ASSEMBLY FOR A PIPELINE

James A. Maple, Anchorage, Ak., and Conrad E. Jacobson, Parsippany, N.J., assignors to Exxon Research & Engineering Company and Exxon Production Research Company, both of, Del.

Filed May 20, 1976, Ser. No. 688,304

Int. Cl.² F16L *3/16*

U.S. Cl. 228—175 **5 Claims**



1. A method for interconnecting a continuous section of an aboveground pipeline composed of sections of pipeline rigidly affixed to one another and a series of ground support members comprising the steps of:

mounting a first member having a recess in a circular opening on one of said series of ground support members, and orienting said first member in an upright direction so that the axis of revolution of said opening intersects the path of said pipeline over said one of said series of ground support members,

slidably mounting a second member having a spherically shaped surface portion on said pipeline, said spherically shaped surface portion having a radius greater than the radius on said opening in said first member,

raising the continuous section of pipeline, positioning said pipeline over said one of said series of ground support members and locating said second member along said pipeline so as to orient said spherically shaped surface portion for partial insertion into said recess in said first member,

affixing said second member to said pipeline,

interengaging said spherically shaped surface portion of said second member with said recess in said first member while allowing substantially free movement of said second member relative to said first member about said first member's transverse, longitudinal and vertical axes relative to the path of said pipeline over said one of said serie of ground support members as said pipeline rests on said first and second members and orients itself relative to said one of said series of ground support members,

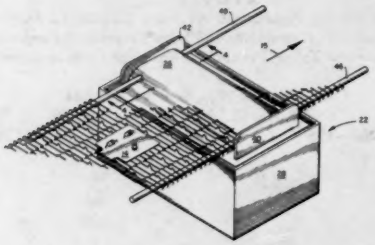
relieving substantially all torsional and bending stresses imposed on said pipeline by allowing said second member to substantially freely self-align itself in said first member as said pipeline is raised and positioned over subsequent ground support members, and

permanently affixing said first and second members to each other after said pipeline is aligned.

4,139,143
WAVE SOLDER MACHINE

Lee C. Gumprecht, Albuquerque, N. Mex., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Nov. 25, 1977, Ser. No. 855,053
Int. Cl.[2] H05K 3/34; B23K 1/02
U.S. Cl. 228—180 R 20 Claims



1. In a wave solder machine for soldering leads of components stuffed in printed circuit (PC) boards to conductive patterns on the undersides of the boards and including means for producing a wave of molten solder having a width which is greater than a broad dimension of circuit boards to be soldered and having a length in a prescribed direction, the improvement comprising:

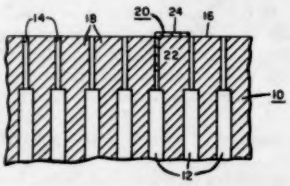
a plurality of elongated wires which extend through the solder wave in the prescribed direction for supporting a stuffed circuit board located thereon by the underside of the board, said wires being at least generally parallel to each other; and

means for moving the circuit board on said wires in the prescribed direction with at least a portion of the underside of the board contacting said wires for causing at least a portion of the underside of the board to contact the molten solder wave as the board passes over it.

4,139,144
EXTRUSION DIE CONVERSION

George M. Cunningham, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,716
Int. Cl.[2] B29F 3/04
U.S. Cl. 228—182 5 Claims

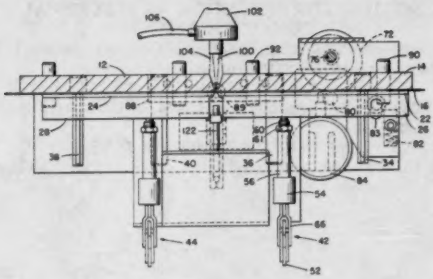


1. A method of converting the discharge pattern of an extrusion die for forming cellular honeycomb articles from a conventional intersecting gridwork pattern to a desired modified pattern which comprises, providing an extrusion die having a plurality of interconnected discharge slots formed in an outlet face thereof and with quadrilateral die pins formed between such slots, providing a plurality of tab members having attachment means for securing said tab members to said die pins and insert means for blocking off selected portions of said discharge slots, inserting said insert means within selected portions of said discharge slots for blocking off said portions and forming a desired discharge pattern, and securing said attachment means to the outlet face of selected die pins.

4,139,145
BAND WELDING FIXTURE

Donn F. Moore, Utica, Mich., assignor to Computer Peripherals, Inc., Rochester, Mich.

Filed Sep. 21, 1977, Ser. No. 835,112
Int. Cl.[2] B23K 37/04
U.S. Cl. 228—212 2 Claims



1. A method of butt welding the ends of a print band in welding apparatus having a pair of support members for said print band with a space between opposing edges thereof, comprising the steps of:

positioning the ends of the print band in juxtaposed relationship at the space between said opposing edges of the support members,

positioning the edge of the print band along a path to provide lengthwise alignment of the print band,

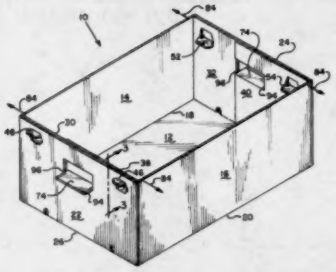
clamping the print band to said support members in a manner to maintain the ends and the edge of the print band as so positioned, and

tilting one of said support members in relation to the other for squaring the ends of said print band prior to welding thereof.

4,139,146
SHIPPING CONTAINER

Robert A. Bamburg, Hebert; Farris N. Duncan, West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Mar. 13, 1978, Ser. No. 885,842
Int. Cl.[2] B65D 5/22
U.S. Cl. 229—32 3 Claims



1. An improved container having an open top and a pair of ends and comprising:

(a) a bottom panel;

(b) a pair of opposed side panels hinged to said bottom panel;

(c) a pair of opposed end panels hinged to said bottom panel;

(d) a pair of corner flaps hinged to opposed sides of said pair of opposed side panels and turned inwardly inside the container and positioned against the end panel closest to said flaps; and

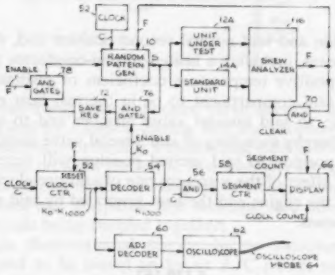
(e) quadruple locking means on each end of the container,

said locking means comprising a locking tab formed on each of the corner flaps and at least two locking tabs formed on the end panel adjacent the corner flaps, the locking tabs formed on the end panel being designed for a downward and inward rotation into the central portion of the container and the locking tabs formed on the corner flaps being designed for an upward and outward rotation to the outside of the container, said quadruple locking means serving to tightly lock said flaps and said end panel together to provide a double wall end to the container along a portion of the end and a triple wall end along the remaining portion of the end.

4,139,147
ASYNCHRONOUS DIGITAL CIRCUIT TESTING AND DIAGNOSING SYSTEM

Robert H. Franke, Santa Barbara, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 821,118, Aug. 2, 1977. This application Sep. 2, 1977, Ser. No. 830,153
Int. Cl.[2] G06F *11/00*; G01R *15/00*
U.S. Cl. 235—302 **17 Claims**



1. Testing and diagnosing apparatus for a digital unit comprising:

a standard unit to which it is desired that said digital unit conform;

generating means for generating a testing signal comprised of a plurality of sequentially occurring different digital signal patterns and for concurrently applying said testing signal to said digital unit and to said standard unit;

analyzing means for continuously comparing the outputs of said digital unit and said standard unit and for producing a failure signal in response to the determination that a predetermined comparison failure has occurred between said outputs; and

indicating means responsive to said generating means and said failure signal for indicating the particular signal pattern of said testing signal for which said failure signal is produced.

4,139,148
DOUBLE BIT ERROR CORRECTION USING SINGLE BIT ERROR CORRECTION, DOUBLE BIT ERROR DETECTION LOGIC AND SYNDROME BIT MEMORY

James H. Scheuneman, St. Paul, and John R. Trost, Anoka, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 25, 1977, Ser. No. 827,540
Int. Cl.[2] G06F *11/12*
U.S. Cl. 235—312 **5 Claims**

1. A method of performing double bit error correction in a memory system incorporating only single bit error correction logic, comprising:

storing a data word and associated zero bit error indicating syndrome bits at every addressable location of an addressable memory;

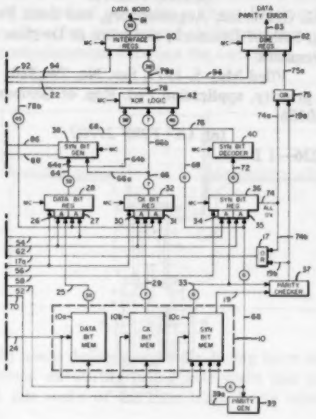
examining one of said data words for a detected single bit error therein;

generating single bit error connecting syndrome bits from said data word if a single bit error is detected therein;

correcting said single bit error detected data word using said generated single bit error correcting syndrome bits;

storing said single bit error correcting syndrome bits in the place of said associated zero bit error indicating syndrome bits;

examining said corrected single bit error detected data word for a detected double bit error therein;



correcting said double bit error detected data word using said stored single bit error correcting syndrome bits;

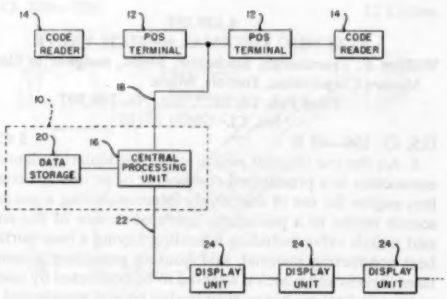
generating single bit error correcting syndrome bits from said single bit error corrected, double bit error detected data word; and,

correcting said single bit error corrected, double bit error detected data word using said single bit error correcting syndrome bits that were generated from said once single bit error corrected, double bit error detected data word.

4,139,149
DISPLAY SYSTEM

Philip C. Crepeau, San Diego, and Masami S. Kaino, Del Mar, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 31, 1977, Ser. No. 829,556
Int. Cl.[2] G06K *15/00*; G09F *3/20*; B65G *47/00*
U.S. Cl. 235—383 **12 Claims**



1. In a store:

a plurality of stock locations;

a plurality of display units, each one of said display units at one of said locations;

data transmission line means connecting said plurality of display units in series; and

computer means, for transmitting a series of signals to said serially connected display units, each of said signals associated with and conveying data to be displayed at one of said display units, said series of signals transmitted in the same order as said serially connected display units so that at the end of the transmission of said series of signals, each of said display units has received its associated signal.

4,139,150

SLIDE VALVE

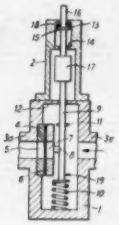
Niels P. G. Graversen, Augustenborg, and John Porland, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 5, 1977, Ser. No. 794,310

Claims priority, application Fed. Rep. of Germany, May 10, 1976, 2620558

Int. Cl.[2] F28F *27/02*

U.S. Cl. 236—1 B **2 Claims**



1. A combination heating and cooling valve assembly, comprising a housing having inlet and outlet ports with said outlet port having a particular height, a movable valve plate cooperable with said outlet port, said valve plate having an aperture and upper and lower closure portions, said valve plate having first and second closed positions corresponding to heating and cooling operations wherein said upper and lower closer portions respectively close said aperture, valve operating rod means connected to said valve plate and being movable relative to said housing, temperature responsive expansible link means between the ends of said rod means for lengthening or shortening said rod means, spring means for biasing said rod means in an upward direction, a second outlet port aligned with said rod means, a closure member attached to the end of said rod means for fluid control cooperation with said second port with the opening and closing of said second outlet port being generally opposite to the opening and closing of said first outlet port.

4,139,151

ELECTRIC THERMAL SWITCH VALVE

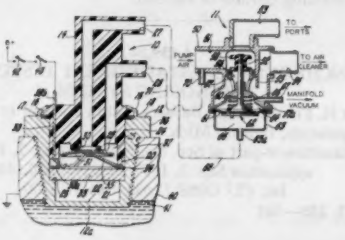
William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1977, Ser. No. 769,907

Int. Cl.[2] G05D *23/10*

U.S. Cl. 236—48 R **5 Claims**

1. An electric thermal switch valve particularly adapted for connection to a preselected component of an internal combustion engine for use in selectively interconnecting a pneumatic source means to a pneumatic operated device of the engine, said switch valve including a housing having a base portion of heat conducting material, said housing providing a compartment therein and which is adapted to be connected by said base portion in heat exchange relationship to said preselected component of the engine, a temperature operated valve means in said compartment, said valve means including at least one valve seat in said housing through which said pneumatic source means is adapted to be interconnected to said pneumatic operated device and at least one disk-shaped, temperature responsive, bimetal valve member in said compartment which is adapted to be actuated from a normal first position relative to said valve seat to a second position relative to said valve seat when said bimetal valve member senses a predetermined temperature, spring means positioned in said housing in spaced apart relation to said valve seat, said spring means engaging said bimetal valve member to support said bimetal valve member in an operative, sandwiched, position between said valve seat and said spring means for movement into and out of engagement with said valve seat as determined by said normal



first position and said normal second position and, electrical heating means, including a heater of semi-conductor material, having a positive temperature coefficient of resistance positioned in said compartment to be in thermal heat exchange relationship to said bimetal valve member and to said base portion whereby switching of said bimetal valve member from said first position to said second position will occur as the combined effect of the warm-up rate of said preselected component of the engine and the heat generated by said electrical heating means.

4,139,152

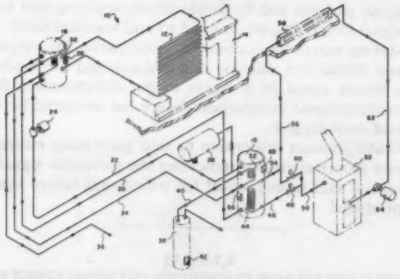
HEATING SYSTEM

Joseph A. Kronberger, Jr., R.D. #2, Williamstown Rd., Franklinville, N.J. 08322

Filed Apr. 5, 1977, Ser. No. 784,934

Int. Cl.[2] F24D *3/08*

U.S. Cl. 237—8 R **3 Claims**



1. A heating system comprising:

a heating coil located within a fireplace and a fluid within said heating coil, said fluid and coil being adapted to be heated by a fire within said fireplace;

fluid storage means, said fluid storage means being in fluid communication with said heating coil;

a first heat exchange means located within said fluid storage means, said first heat exchange means being adapted to contain water therein and being adapted to be connected to a hot water heating system;

means for circulating water through said first heat exchange means and said hot water heating system, and

a second heat exchange means within said fluid storage means, said second heat exchange means having a first end

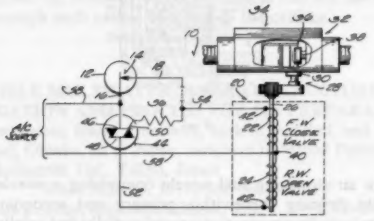
adapted to be connected to an incoming water line and a second end adapted to be connected to the input of a hot water heater whereby water from said incoming water line is preheated within said storage means before it flows into said hot water heater.

4,139,153

ELECTRONIC REVERSIBLE MOTOR OPERATED VALVE ASSEMBLY

Richard K. Engholdt, Wauwatosa, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.

Filed Jan. 28, 1977, Ser. No. 763,509
Int. Cl.² F16K *31/04*; H02P *1/40*; F16K *11/20*
U.S. Cl. 236—78 C **11 Claims**



1. An electronic motor operated valve assembly adapted to be controlled by a switch having first and second wires, the switch selectively providing a conducting state and a non-conducting state between the wires, said assembly comprising:

first and second motor windings each having a common end terminal and a separate end terminal, said common end terminals being coupled together;

a single three-terminal semiconductor switching means adapted to be biased on by an A/C power source and having first, second, and third terminals, said first terminal being coupled to the first wire of the switch, said second terminal being coupled to said separate end terminal of said second motor winding, and said third terminal being coupled to the second wire of the switch and to said separate end terminal of said first motor winding;

said first terminal and said coupled together common end terminals being adapted for coupling to an A/C power source to afford biasing said semiconductor switching means and to afford alternately energizing said motor windings,

whereby, when said switch selectively provides the non-conducting state, said semiconductor switching means is biased on to conduct between said first and second terminals so that said second motor winding is energized by being coupled to the A/C power source through said semiconductor switching means, and

whereby, when the switch provides the conducting state, said semiconductor switching means is biased off to become non-conductive between said first and second terminals, and said first motor winding is alternately energized by being coupled to the A/C power source through the switch.

4,139,154

RAIL FOR CENTER-FLANGE WHEELS

Gerard Giroud, 36, rue de Teeside, Dunkerque, France (59240)

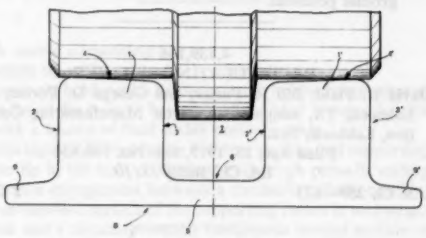
Continuation-in-part of Ser. No. 590,860, Jun. 27, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 760,827
Claims priority, application France, Jul. 12, 1974, 74 24207
Int. Cl.² E01B *5/04, 21/00*
U.S. Cl. 238—136 **3 Claims**

1. A roadbed for heavy hoisting machinery such as a crane, or a gantry crane, mounted on at least one pair of flanged wheels for movement of the crane between hoisting positions and for supporting the crane in a fixed position on the roadbed when engaged in said hoisting, said roadbed being provided with a railway line formed of two parallel rails spaced apart at a distance of at least 5 meters, the upper surfaces of said rails lying flush with the surface of the roadbed to permit the passage of other vehicles, each of said rails comprising;

two heads, the upper surfaces thereof forming two parallel, laterally-spaced treads to receive the rolling surface of a wheel;

and, a horizontal strip integrally joined to said heads below the level of the flange of a wheel rolling on said treads;

the space between the heads and the horizontal strip defining an intermediate channel to freely receive the tapered flange of the wheel normally without frictional engagement to allow for some lateral shifting of the wheel and possible misalignment between the two rails;



each of said heads defining inwardly-facing inner side walls and external outwardly-facing side walls said inner and external side walls of the two heads being substantially vertical;

and a horizontal integrally formed base to support the two heads, the height of said external side walls being substantially equal to the width of each of the heads, each of the two heads thus forming a solid mass of generally square cross-section each resting on said horizontal base, said base extending outwardly beyond said outwardly-facing side walls, the upper exterior surfaces of the base defining with said external side walls an angle of no less than 90°;

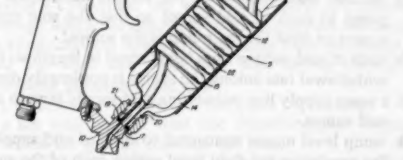
the vertical side walls of the heads permitting vertical forces on the treads to be transmitted directly downwardly to the base without any twisting or buckling effect on the heads.

4,139,155

ELECTROSTATIC SPRAY GUN WITH ISOLATING PAINT CONDUIT

Donald R. Hastings, Elyria, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed May 25, 1977, Ser. No. 800,255
Int. Cl.² B05B *5/02*
U.S. Cl. 239—708 **12 Claims**



1. In an electrostatic hand held liquid coating gun for moderately conductive paints including those paints using a polar type solvent, the gun having a barrel, at one end of which barrel paint is atomized and electrically charged, the other end

of which barrel is supportably connected to a handle assembly having a distal base, and which extends at an angle from said barrel, the barrel further comprising a passage for the paint which will be atomized, an opening through the side of the barrel in fluid communication with said passage and adapted to be connected to a source of paint under pressure, the improvement which comprises:

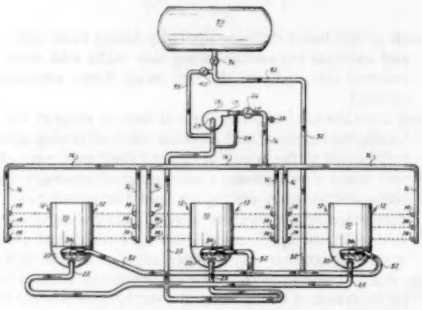
a dielectric conduit spiraled for a substantial portion of its length in non-encompassing relationship with said barrel, having a first end in hydraulically sealable fluid connection to the opening of said barrel and a second end adapted to be connected in spaced apart relation from said first end to a source of paint under pressure; and conductor means in electrical contact with any liquid in said conduit at a point proximate said second end of said conduit; said conductor means further being electrically connected to ground potential.

4,139,156

RECIRCULATING SPRAYER

David D. Field; Bill R. Porter, and George D. Porter, all of Lubbock, TX, assignors to Porter Manufacturing Corporation, Lubbock, Tex.

Filed Apr. 25, 1977, Ser. No. 790,434
Int. Cl.[2] B05B *11/10*
U.S. Cl. 239—121 **2 Claims**



1. In a fluid retrieval sprayer having

a. a supply tank,

b. a pump having

(i) a suction connection and

(ii) a pressure connection,

c. a plurality of nozzles,

d. a pressure line connecting the pressure connection of said pump to said nozzles,

e. a plurality of fluid capture chambers providing means for capturing a stream of fluid from the nozzles, and

f. each fluid capture chamber having a fluid sump fluidly connected to the tank;

the improved recirculating structure comprising in combination with the above:

g. suction lines connecting the suction connection of the pump to each of said sumps so that the sole operating source of fluid for the pump is the sumps,

h. each of said suction lines being equal in length so that the withdrawal rate among the sumps is not largely disparate,

j. a sump supply line connecting said supply tank to each of said sumps,

k. sump level means connected to each of said supply lines for regulating the fluid level within each of the sumps,

m. pressure control means in the pressure line for controlling the fluid pressure at the nozzles, and

n. a by-pass conduit from the pressure control means to the suction line,

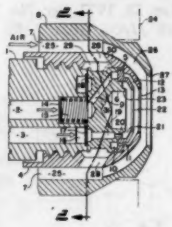
o. said supply tank elevated above said sumps and the fluid feeds from the supply tank is by gravity.

4,139,157

DUAL AIR-BLAST FUEL NOZZLE

Harold C. Simmons, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sep. 2, 1976, Ser. No. 719,686
Int. Cl.[2] B05B *1/34*
U.S. Cl. 239—400 **2 Claims**



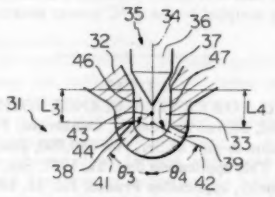
1. An air-atomizing fuel nozzle comprising a nozzle body assembly defining therewithin primary and secondary fuel passages including respective coaxial radially and axially outer and inner primary and secondary vortex chambers to impart a whirling motion to the fuel flowing through said passages for discharge from said vortex chambers in the form of a conical sheet of radial thickness representing the conjoint flow through said primary and secondary passages, said body assembly having central and annular air passages from which air is discharged respectively interiorly and exteriorly of said conical fuel sheet to atomize the conical fuel sheet whether of thickness corresponding to the flow through said primary vortex chamber alone or of thickness corresponding to the sum of the flows through said primary and secondary vortex chambers, said primary and secondary vortex chambers terminating in axially spaced-apart primary and secondary discharge orifices of which said primary discharge orifice is downstream of said secondary discharge orifice; said primary discharge orifice being of larger diameter than said secondary discharge orifice by an amount approximately equal to twice the radial thickness of the fuel emerging from said primary discharge orifice.

4,139,158

FUEL DISCHARGE NOZZLE

Kazuo Uchida, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 718,245, Aug. 27, 1976, abandoned.
This application Feb. 23, 1978, Ser. No. 880,409
Claims priority, application Japan, Sep. 1, 1975, 50/104978
Int. Cl.[2] B05B *1/14*
U.S. Cl. 239—533.12 **1 Claim**



1. A fuel discharge nozzle comprising:

a nozzle body defining a fuel discharge chamber therein;

a fuel discharge control valve opening into the chamber for controlling flow of fuel thereinto;

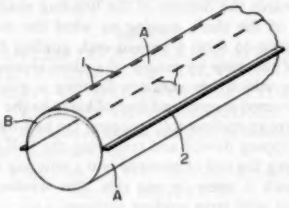
the nozzle body being formed with pairs of diametrically opposed fuel discharge orifices opening from the chamber with each orifice of a pair being spaced from the valve along an axis of the chamber, each of the orifices being circumferentially spaced from one another about the axis of the chamber, the orifices opening from the chamber and each orifice of a pair having axes which intersect the axis of the chamber at different angles respectively, points of intersection of the axes of each orifice of a pair of the orifices with the axis of the chamber being spaced from the valve by distances which increase with the angles, axial distances of each orifice of a pair of the orifices from the valve being such that the fuel flows from the valve through the chamber to each orifice of a pair of the orifices along respective fuel flow paths of substantially equal curvature, whereby equal amounts of fuel are discharged through each orifice of a pair of the orifices.

4,139,159

FLEXIBLE MULTILAYER TUBULAR STRUCTURE FOR IRRIGATION AND PROCESS FOR ITS PREPARATION

Naofumi Inoue; Itsuro Furukawa, both of Iwakuni, and Toshio Usami, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,175
Claims priority, application Japan, Jun. 1, 1976, 51-69611[U]
Int. Cl.[2] B05B *15/00, 3/16;* F16L *11/04*
U.S. Cl. 239—547 **11 Claims**



1. A multilayer tubular structure for irrigation, which comprises

(A) a flexible outer layer comprising a tube of a thermoplastic synthetic resin film having at least one continuous fin-like heat-sealed portion extending longitudinally of the outer layer and a plurality of slit-shaped watering orifices spaced longitudinally of the outer layer at given intervals, and

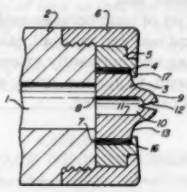
(B) at least one flexible inner layer comprising a water-permeable, water-insoluble non-woven sheet obtained by forming fibers of a thermoplastic synthetic resin and other fibers which do not melt at the melting point of the synthetic resin into a sheet form, and heat-treating the resulting structure at a temperature above the melting point of the thermoplastic synthetic resin fibers but below the temperature at which the other fibers melt, thereby to bond the fibers to one another located inwardly of the outer layer and fixed to the outer layer, said sheet being permeable to a larger amount of water than the film which constitutes the outer layer (A); said tubular structure assuming an expanded tubular shape when water is passed through it and a flattened tubular shape when water is not passed through it, said expanded tubular shape including a clearance between the outer layer (A) and inner layer (B), the outer layer (A) and the inner layer (B) being isolated from each other over a greater part of the structure at least including the watering orifices in the outer layer, and the inner layer (B) being located inwardly of the outer layer (A) so that water supplied passes through the inner layer (B) and flows out from the watering orifices in the outer layer (A).

4,139,160

SPRAY NOZZLE HAVING AN IMPROVED SEAL

Alvin A. Rood, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed May 20, 1977, Ser. No. 799,037
Int. Cl.[2] B05B *15/00;* F16L *19/00*
U.S. Cl. 239—600 **8 Claims**



1. A nozzle comprising:

a nozzle tip with a passage through it;

a nozzle tip holder with a hole in it, the holder being adapted to have the hole in hydraulically sealed communication with a source of fluid under pressure; and

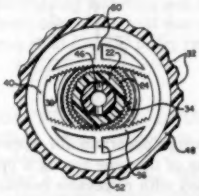
means tapered from a larger end to a smaller end supporting the tip in the hole of the holder through press-fit mating surface engagement between a circumferentially continuous outward surface of the supporting means at said larger end and a circumferentially continuous inward surface of the hole in the holder, and through press-fit mating surface engagement between a circumferentially continuous outward side surface of the tip and a circumferentially continuous inward surface of the supporting means at said smaller end, wherein the forces exerted by the supporting means at the mating surfaces interact only indirectly through a portion of the supporting means displaced from the mating surfaces.

4,139,161

CONTAINER AND GRINDER COMBINATION

Peter J. Hupperich, Morton Grove, Ill., assignor to Ethyl Products Company, Baton Rouge, La.

Filed Sep. 30, 1977, Ser. No. 838,206
Int. Cl.[2] A47J *42/04*
U.S. Cl. 241—162 **9 Claims**



1. A package for grinding and dispensing the contents of the package, which package comprises:

a. a container for holding unground product, said container having a cylindrical top wall with at least one aperture through which the unground contents can pass and having a cylindrical post upwardly extending from the center of said top wall, said cylindrical post having outwardly extending grinding teeth; and

b. a plastic, integrally formed, one-piece cap having:

i. a top wall with at least one dispensing port through which the ground contents can pass,

ii. a cylindrical sealing surface below said top wall for forming a rotating seal with said cylindrical top wall,

iii. means for mounting said cap to said container, said cap being rotatable about the center axis of said post,

iv. a first arc of inwardly extending grinding teeth, said

first arc having a radius greater than the radius of said post, and a second arc of inwardly extending grinding teeth, said second arc being opposite said first arc and having a radius substantially identical to the radius of said first arc, said first and second arcs of teeth being adjacent said outwardly extending teeth to cooperate therewith to grind said unground contents when said cap is rotated, and,

v. a circular set of teeth between said first and second arcs of teeth and said cap top wall, said circular set of teeth surrounding said outwardly extending teeth to cooperate therewith to further grind said ground contents when said cap is rotated.

4,139,162

OPEN-END SPINNING FRAME WITH A DEVICE FOR REPLACING FULL BOBBINS WITH EMPTY TUBES

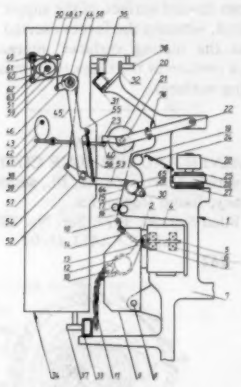
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7341 Bad Uberkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed May 19, 1977, Ser. No. 798,470

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624499

Int. Cl.[2] B65H *54/20, 54/26*

U.S. Cl. 242—35.5 A **19 Claims**



1. Bobbin exchange apparatus for open-end spinning machines and the like of the type having a plurality of spinning assemblies provided with respective bobbin holders for holding bobbins to store thread produced at the spinning assembly; said apparatus comprising:

a depot device for storing an empty tube at a spinning assembly,

an empty tube engaging means for engaging an empty tube in said depot device,

guide means for guiding said tube engaging means with the empty tube engaged thereby to the bobbin holder at said spinning assembly, and

bobbin holder opening means for opening said bobbin holder to accommodate removal of a full bobbin and insertion of an empty tube carried by said empty tube engaging means, said bobbin holder opening means including means for opening said bobbin holder when said empty tube engaging means is in a position for one of said empty tube engaging means and said empty tube carried thereby to at least partially support a full bobbin in said bobbin holder.

4,139,163

LOADING A CASSETTE WITH AN ENDLESS ROLL OF STRIP FORM MATERIAL

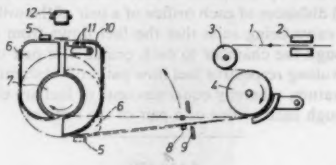
Walter Tabel, Cologne, and Heinz Johanns, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 816,168

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632767

Int. Cl.[2] B65H *19/20*; B31F *5/00*

U.S. Cl. 242—56 R **4 Claims**



1. A method of loading a cassette with an endless roll of strip-form material comprising the steps of securing a first end of a strip of material in a fastening means on the perimeter of a first half-form disc the front face of said first disc being connected to a winding shaft and having surfaces gathering and guiding the strip tangentially on to the winding shaft by means of the surfaces of the first half-form disc during a half rotation with simultaneous axial displacement by a distance equal to the width of the strip, building up a roll of said strip material from the inside towards the outside of the winding shaft upon further rotation of the shaft, ceasing to wind the material and severing the strip to form a second end, guiding the severed second end of the strip by means of a claw around a second half-form disc which has surfaces forming a guide passage, splicing the severed second end free of kinks to the first end of the strip to form an endless roll, grasping the half-form discs by means of a gripping device and removing the half-form discs, and then feeding the roll of material into a winding chamber of a cassette which is open on one side, this winding chamber being provided with strip guiding surfaces.

4,139,164

METHOD AND DEVICE FOR WINDING BOBBINS OF RUBBERY AND ESSENTIALLY EXTENSIBLE TAPE MATERIAL

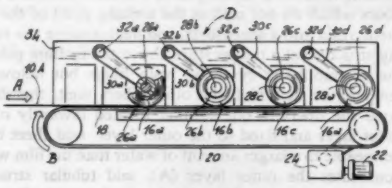
Deregibus Alfio, Padova, Italy, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1977, Ser. No. 841,778

Claims priority, application Italy, Apr. 5, 1977, 23158 A/77

Int. Cl.[2] B35H *35/02*

U.S. Cl. 242—56.4 **1 Claim**



1. Apparatus, for winding into individual bobbins a plurality of tapes derived from a common sheet of fabric reinforced rubber by parting the sheet along parallel lines, comprising:

(i) a machine frame structure

(ii) a conveyor mat engaged about spaced end rollers journalled on the machine frame structure, said conveyor mat including a plane upper run

(iii) means for guiding the plurality of tapes onto the upper run of the conveyor mat in side-by-side parallel positions

(iv) drive means coupled to one said end roller for driving the conveyor mat in a direction for drawing the plurality of tapes onto the conveyor mat

(v) a plurality of pivots, in the same number as the number of tapes, on a portion of the machine frame structure disposed at one side only of the upper run of the conveyor mat, the pivots being disposed serially in the direction of movement of the upper run of the conveyor mat and having their axes lying in a common plane parallel to the upper run

(vi) corresponding plurality of cantilever arms each carried on a respective pivot and extending from the pivot at an inclination downwards towards the upper run and in the direction of movement of the upper run, the arms all being disposed laterally of and at a level higher than the upper run

(vii) a corresponding plurality of shafts each carried on the free end of a respective cantilever arm and extending from the arm transversely over the upper run normal to the direction of movement of the upper run and parallel thereto

(viii) a corresponding plurality of hubs each carried in freely rotatable manner on a respective one of the shafts, the shafts being of different lengths and the hubs being disposed each at a respective transverse position corresponding to one of the tapes carried on the upper run, each hub being raisable, by movement of its cantilever arm about its pivot, to accommodate increasing radius as a bobbin of the tape is wound onto the hub by movement of the upper run causing rotation of the bobbin resting thereon.

4,139,165

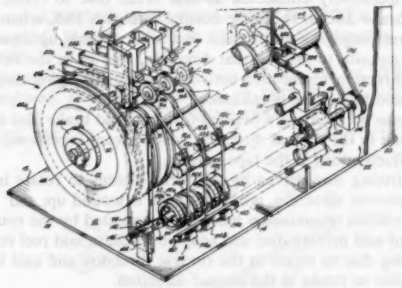
PARALLEL-FEED TAPE SPOOLING APPARATUS FOR CONCURRENT WINDING OF MAGNETIC TAPES ONTO A PLURALITY OF SPOOLS OF THE TYPE USED IN ENDLESS TAPE CARTRIDGES

Arthur Dyck, Burnaby, Canada, assignor to International Audio Visual, Inc., Glenview, Ill.

Filed Nov. 25, 1977, Ser. No. 854,837

Int. Cl.[2] B65H *19/04*

U.S. Cl. 242—56.9 **20 Claims**



1. A parallel feed tape spooling apparatus for concurrently winding magnetic recording tape onto a plurality of endless tape cartridge spools of the type in which an endless tape is withdrawn from the innermost winding on the spool and returned to the spool as the outermost winding, comprising:

tape supply means for supplying a plurality of strands of magnetic tape which are to be wound onto a corresponding plurality of spools;

takeup means including a takeup shaft on which a plurality of such spools are arranged side-by-side, for being jointly and coaxially rotated by said takeup shaft;

tape feed means for feeding said strands of tape in spaced parallel feed paths between said tape supply means and the individual spools on said takeup means;

electrically energizable drive means for driving said feed means to advance said strands of tape at a predetermined longitudinal feed rate, and for rotatably driving said takeup shaft at a rotational speed selected such that spools, if rotated at the same speed, would tend to take up said strands of tape at a longitudinal takeup rate that is greater than said longitudinal feed rate; and

said takeup means including slip-clutch means coupling said spools to said takeup shaft for causing said spools to rotatively slip relative to said takeup shaft in reaction to tension in the strands of tape so that the longitudinal takeup rate of the strands of tape is limited by and equal to said longitudinal feed rate and so that the strands of tape are wound onto the spools under tension established by frictional forces associated with said slip-clutch means.

4,139,166

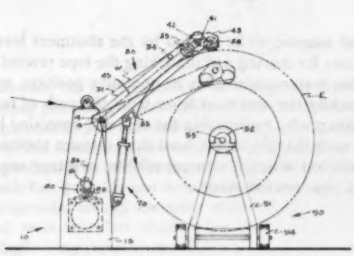
SURFACE WIND BATCHER

Jack D. Powell, Greer, and Jochem Schoellkopf, Spartanburg, both of S.C., assignors to Menzel, Inc., Spartanburg, S.C.

Filed Jun. 8, 1977, Ser. No. 804,785

Int. Cl.[2] B65H *17/08*

U.S. Cl. 242—66 **11 Claims**



1. An improved surface wind batcher comprising:

(a) a support frame;

(b) an arm structure pivotally secured to said support frame and extending outwardly therefrom;

(c) a pair of driven rolls received at an outer free end of said arm structure, one of said rolls being driven at a faster rotational rate than the other of said rolls, said rolls being contactable with a web roll throughout the production of same; and

(d) drive means for rotating said rolls, said drive means being connected to both driven rolls said one of said rolls being geared to a drive shaft for said faster rate of speed.

4,139,167

CASSETTE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 5, 1977, Ser. No. 795,065

Claims priority, application Japan, May 11, 1976, 51-59249[U]

Int. Cl.[2] G11B *15/22, 15/30*

U.S. Cl. 242—189 **11 Claims**

1. A cassette tape recorder having an auto shut-off apparatus which is operable during a tape rewind mode; the apparatus comprising a tape end detecting lever pivotally mounted on a stationary baseplate within a tape recorder and having an arm which carries a tape rewind shaft adapted to engage one of the tape hubs of a tape cassette, the detecting lever being adapted to rock as a tape end is reached during a tape rewind mode to stop the movement of a running tape in response to a movement of the tape rewind shaft which occurs as a result of a rotating drive transmitted thereto, an abutment lever pivotally mounted on another arm of the tape end detecting lever and adapted to be brought into the path of rotation of a release pin on a capstan driving flywheel so as to be driven by the pin for rocking motion when the tape end detecting lever rocks, a tape

rewind member supported on the baseplate in a floating manner so as to be capable of a sliding and rocking movement, a sliding movement of the rewind member inward along the baseplate being effective to switch a rotating drive to a tape rewind system in order to establish a tape rewind mode of the tape recorder, locking means for maintaining the tape rewind member in its operative position which establishes the tape rewind mode, a release lever pivotally mounted on the base-

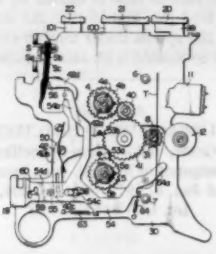


plate and adapted to be rocked by the abutment lever as the latter rocks for driving and unlocking the tape rewind member which has been maintained in its operative position, and means for retracting the abutment lever from the path of rotation of the release pin by maintaining the tape end detecting lever in a manner such that the tape rewind shaft remains stationary at its home position which it assumes relative to a tape supply shaft during a tape rewind mode.

4,139,168

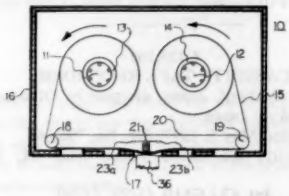
TAPE CASSETTE

Edgar P. Alberding, P.O. Box 382, Salem, Ind. 47167

Filed Jul. 25, 1977, Ser. No. 818,579

Int. Cl.[2] G11B *23/10, 15/26*

U.S. Cl. 242—199 **7 Claims**



7. A tape cassette for a machine having a tape head and tape driving means, said tape cassette comprising a case having a plurality of side openings on one side thereof, a pair of spaced apart cores rotatably mounted on the case, each core having means for securing thereto one end of a continuous length of tape which can be wound in roll form on each core so as to leave a tape-connecting portion between rolls of tape wound on said cores, two pair of guide means mounted in the case, each pair being situated proximate and adjacent the plurality of side openings of said case, and two endless belts engaging major segments of said tape-connecting portion along its length and resilient means mounted between the two pair of guide means, said resilient means facing the tape head and engageable with said tape-connecting portion of the tape.

4,139,169

REEL DISC DEVICE IN A RECORDING AND/OR REPRODUCING APPARATUS

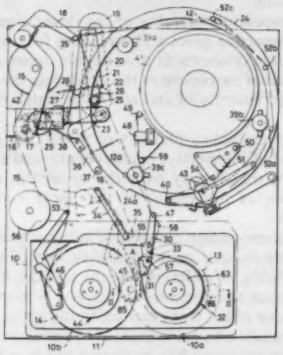
Makoto Kono, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 17, 1978, Ser. No. 897,540

Claims priority, application Japan, Apr. 19, 1977, 52-44136

Int. Cl.[2] G03B *1/04*

U.S. Cl. 242—201 **8 Claims**



1. A reel disc device in a recording and/or reproducing apparatus having means including a capstan and a pinch roller for driving a tape to travel selectively in a normal direction and a reverse direction and drive means for rotatingly driving the reel disc device, said reel disc device comprising:

a disc for engaging a reel and rotating the same unitarily therewith;

a brake disc disposed below and as a separate structure from said reel engaging disc;

a clutch mechanism disposed between said reel engaging disc and said brake disc and adapted so that, when said reel engaging disc rotates in a tape drawing out direction, that is, the normal direction, said reel engaging disc is operatively connected to said brake disc to rotate said brake disc in the same normal direction and, when said reel engaging disc rotates in a tape winding up direction opposite to said normal direction, that is, in the reverse direction, connection between said reel engaging disc and said brake disc is released;

means for exerting a braking force on said brake disc rotating in the normal direction which means is responsive to fluctuations in the tape-tension;

a driving disc driven by said drive means to rotate in the reverse direction, when said tape is wound up; and

a rotation transmission mechanism operated by the rotation of said driving disc and adapted to cause said reel engaging disc to rotate in the reverse direction and said brake disc to rotate in the normal direction.

4,139,170

COMMAND CONTROL SYSTEM

Joseph J. Albert, Timonium, Md., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Jan. 22, 1957, Ser. No. 635,533

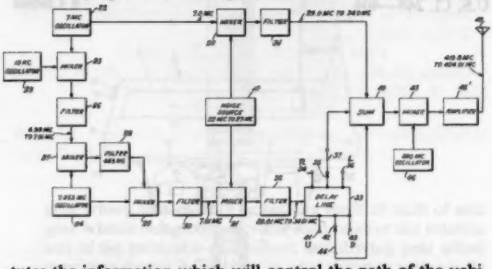
Int. Cl. F41g *7/18, 9/00*; H04b *1/10*

U.S. Cl. 244—3.1 **17 Claims**

10. A method for use in controlling the travel of a vehicle comprising the steps of first deriving two narrow band noise signals of different frequencies, then delaying one of said signals by an amount which constitutes the information which will control the path of the vehicle, next adding the delayed and undelayed signals to form a composite signal, subsequently transmitting the composite signal to a receiver in the vehicle, then applying the composite signal to a non-linear device in

said receiver along with a duplicate waveform of itself which has been delayed in time, subsequently deriving from the non-linear operation through the step of filtering a signal at the difference frequency between the two original noise signals, which signal is a function of the correlation between said composite signal and its delayed duplicate waveform, and lastly applying said difference frequency signal to a non-linear device to generate control signals which are proportional to said correlation.

11. A method for use in controlling the travel of a vehicle comprising the steps of first deriving from a common narrow band noise source, two noise signals of difference frequencies, then delaying one of said signals by an amount which consti-



tutes the information which will control the path of the vehicle, next adding the delayed and undelayed signals to form a composite signal, subsequently transmitting the composite signal to a receiver in the vehicle, then applying the composite signal to a non-linear device in said receiver along with a duplicate waveform of itself which has been delayed in time, subsequently deriving from the non-linear operation a signal at the difference frequency between the two original noise signals, which signal is a function of the correlation between said composite signal and its delayed duplicate waveform, said correlation indicating the information controlling the path of the vehicle, and lastly applying said signal to a detector and relay in order to control the power that is used to move the controls of the vehicle.

4,139,171

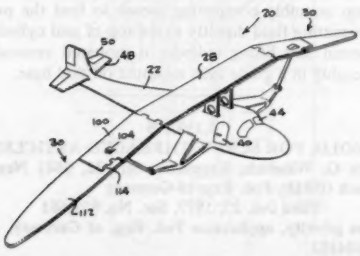
ARTICULATED WING ORNITHOPTER

Jeremy M. Harris, 479 Park Overlook, Worthington, Ohio 43085

Continuation-in-part of Ser. No. 705,813, Jul. 16, 1976, abandoned. This application Aug. 19, 1977, Ser. No. 826,942

Int. Cl.² B64C *33/00*

U.S. Cl. 244—22 **7 Claims**



1. An ornithopter comprising a body and a wing, said wing comprising first and second outer wing segments, a center wing segment having a first end pivotally connected to one end of said first outer wing segment and having a second end pivotally connected to one end of said second outer wing segment, the area of said center wing segment being a significant portion of the wing area of said wing, a driving means for translating said center wing segment with respect to said body, and means for rotating said outer wing segments relative to said center wing segment thereby providing an ornithopter with a large swept volume and essentially constant lift.

4,139,172

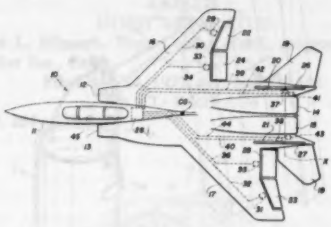
STAGGERWING AIRCRAFT

Chester W. Miller, St. Louis County, and Ray N. Herring, Overland, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 3, 1977, Ser. No. 773,967

Int. Cl.² B64C *3/00, 3/38*

U.S. Cl. 244—45 R **12 Claims**



1. In aircraft, the combination of an elongated fuselage and a single wing providing substantially all the lift of said aircraft, said wing consisting of a first single wing panel connected at one side of said fuselage, a second single wing panel connected at the opposite side of said fuselage, said first and second single wing panels being similar and in substantial coplanar alignment from side-to-side, having the same angle of sweep and being staggered, with said first single wing panel offset from said second single wing panel so as to have an asymetrical relationship relative to the longitudinal axis of said fuselage.

11. In a single wing aircraft convertible from a symmetrical wing configuration to a staggered wing configuration having substantially unchanged aerodynamic parameters affecting stability and control, and achieving significant reduction in wave drag at or in the region of Mach 1.2 for the staggered wing configuration, the combination of an elongated fuselage in which the center of gravity of the aircraft is located on the longitudinal axis of the fuselage, a pair of wing panels operably connected to said fuselage with one panel on each side of said fuselage and said panels having leading and trailing edges with said leading edges having the same angle of sweep, and means operating said panels between positions in symmetrical side-to-side alignment and positions with said panels staggered with one panel leading edge offset from the other panel leading edge so as to have an asymmetrical relationship relative to the longitudinal axes of said fuselage and without change in the sweep angle of said wing panels, such that the center of pressure of said panels are relatively displaced with respect to each other and with said center of gravity, and in such staggered wing configuration the cross sectional area of said panels is distributed along said fuselage to produce the reduction in wave drag.

4,139,173

INSTANT SCAFFOLD AND PAINT CAN HOLDER

William J. Kahn, 320 E. 30th St., Paterson, N.J. 07504

Continuation-in-part of Ser. No. 666,009, Mar. 11, 1976, Pat. No. 4,032,100. This application May 17, 1977, Ser. No. 797,876

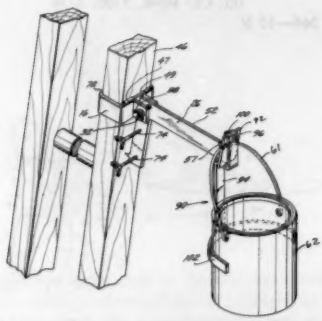
The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.

Int. Cl.² E06C *7/14*; A47K *1/08*

U.S. Cl. 248—311.1 R **16 Claims**

1. A support device comprising a pair of opposed bracket members of substantially identical configuration adapted to receive a support post element therebetween, said bracket members each including a flange element extending outwardly therefrom and located in parallel relation to each other; a

generally L-shaped support bar having first and second angularly related legs; and means for pivotally securing said support bar to said bracket members between said flange elements adjacent the juncture between said legs wherein, in the operative supporting position of said device said first leg extends generally horizontally outwardly of said bracket elements and defines a scaffold support surface and said second leg extends generally vertically to engage said support post element; said securing means including a pivot pin extending through said



flange elements and said support bar, and spring means being operatively engaged between said flange elements for biasing said flange elements apart whereby said bracket elements may be urged part against the bias of said spring means to permit adjustment of the position of the support device on said post; and a paint can guide bracket pivotally mounted on said first leg of the support bar for pivotal movement in a vertical plane transversely of said first leg; said guide bracket including a guide bar for at least partly surrounding a can of paint supported by the bail on said first leg.

4,139,174

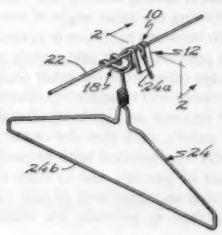
CLOTHESLINE CLIP FOR GARMENT HANGERS

Shirley A. Olson, 1065 Nelson Dr., St. Paul, Minn. 55112

Filed May 2, 1977, Ser. No. 793,002

Int. Cl.[2] B42F *13/00*

U.S. Cl. 248—317 **4 Claims**



2. A clip for clothes hangers comprising a U-shaped section including first and second generally parallel straight legs and a curved connecting bight at one end of said legs forming a groove for accommodating therein a section of clothesline or the like, and a generally straight wing section projecting angularly away from said U-shaped section, said U-shaped and wing sections having elongated openings therethrough for accommodating the hook portion of a garment hanger, said opening in said U-shaped section including a slot portion extending from a location in said first leg spaced from said bight toward said bight and a slot portion extending from a location in said second leg spaced from the other end of said second leg toward said bight, said opening in said wing section including a slot extending from a location therein spaced from said other end of said second leg toward the free end of said wind section, said location in said first leg being farther from said bight than said location in said second leg is from said bight.

4,139,175

HEIGHT-ADJUSTABLE CHAIR OR TABLE PEDESTAL

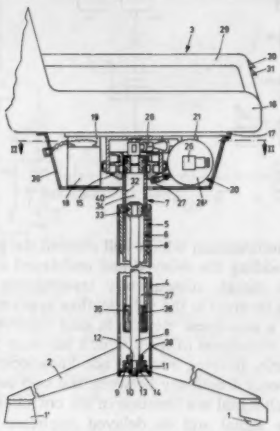
Fritz Bauer, Altdorf b.Nüremberg, Fed. Rep. of Germany, assignor to Suspa Federungstechnik Fritz Bauer & Söhne OHG, Nüremberg, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,893

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630483

Int. Cl.[2] F16M *11/00*

U.S. Cl. 248—404 **8 Claims**



1. In a height-adjustable chair or table pedestal with lifting means consisting of a hydraulic lifting cylinder and piston rod telescopically extendable therefrom, one end of said lifting means being axially connected with a height-adjustable plate and the other end being axially connected with a base, and a pump assembly driven by an energy source and connected with the lifting cylinder in the vicinity of its free end, said pump assembly serving to charge the lifting means with pressure-transmitting fluid, the improvement wherein:

said energy source, said pump assembly and said lifting means are combined in a subassembly mounted on the underside of said plate; the lower end of said piston rod is mounted in said base with the upper end of said lifting cylinder supporting said height-adjustable plate; said pump assembly comprising means to feed the pressure-transmitting fluid directly to the top of said cylinder; and wherein said lifting cylinder is mounted vertically displaceably in a guide tube mounted on said base.

4,139,176

MOLD, FOR SCREW-THREADED ARTICLES

Johannes G. Wündsch, Kronacher Str. 32, 8641 Neuses bei Kronach (BRD), Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,681

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 2634152

Int. Cl.[2] B29F *1/14*

U.S. Cl. 249—59 **3 Claims**

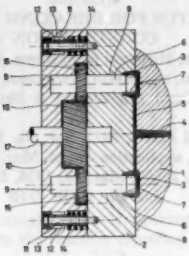
1. A mold for producing screw-threaded molded articles, comprising:

a mold part having at least one spindle carrying a screw-thread for shaping the screw-thread of an article incident its being molded, said spindle being mounted on said mold part to be rotatable and axially displaceable relative to said mold part,

a driven gear wheel secured to said spindle to be rotatably driven and axially displaced in unloading a molded article from the mold,

a driving gear wheel mounted to be rotatable about an axis parallel to the rotation axis of said driven gear wheel,

each of said gear wheels having radially projecting teeth on the periphery thereof with the teeth of said driving gear wheel drivingly interengaged with the teeth of said driven



gear wheel, said radially projecting teeth of each of said gear wheels being obliquely disposed relative the rotation axis of the particular gear wheel, said driving gear wheel imparting during its rotation an axial thrust to said spindle through the drivingly interengaged obliquely disposed teeth on said gear wheels to substantially compensate for opposing frictional and adhesion forces acting upon said spindle during unloading of a molded article from the mold.

4,139,177

APPARATUS FOR THE INJECTION-MOLDING AND COOLING OF SHAPED SYNTHETIC-RESIN BODIES

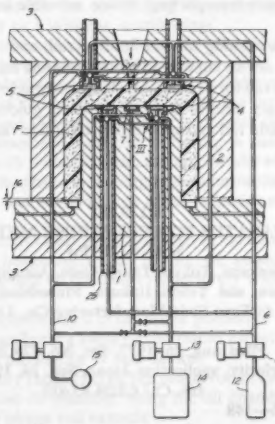
Robert Hanning, Via Marco 47, Campione d'Italia (TI), Switzerland (CH-6911)

Filed May 26, 1977, Ser. No. 801,013

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640607

Int. Cl.² B29C *7/00*; B29F *1/14*

U.S. Cl. 249—66 C **7 Claims**



1. An apparatus for making a molded synthetic-resin body comprising:

a plurality of separable molded parts defining a mold cavity between them in a closed position of said mold parts;

means connected with the mold cavity for introducing between the walls of said cavity and surfaces of the synthetic-resin material therein a liquefied-gas coolant substantially uniformly over said surfaces, said means for introducing said liquefied-gas coolant into said mold cavity comprising a plurality of nozzles opening at said walls of said cavity and respective passages in said mold parts communicating with said nozzles, said mold parts being formed with at least one coolant outlet for discharging said coolant from said mold cavity, said outlet being constituted as a gap formed between said parts and communicating with the interior of the mold cavity, said gap being dimensioned to have over its entire length substantially the same fluid flow resistance; and

means for controlling said flow resistance.

4,139,178

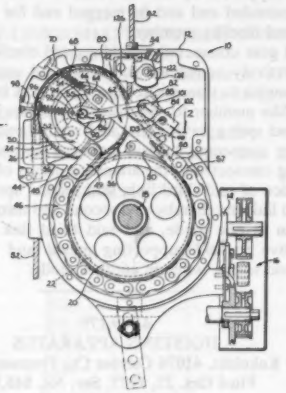
HOIST APPARATUS

Wilburn L. Hippach, West Covina, Calif., assignor to Power Climber Inc., Calif.

Filed Sep. 22, 1977, Ser. No. 835,684

Int. Cl.² B66D *1/76*

U.S. Cl. 254—175.5 **4 Claims**



1. An improved hoist apparatus for moving along a cable comprising;

a housing;

a first disclike member mounted to said housing and having a circumferential peripheral groove receiving a cable;

a first link having first and second arms in a generally L-shape, said link being pivotally connected to said housing where the two arms merge;

a second disclike member rotatably mounted to said first link at a mid portion of said first arm for allowing said second disclike member to pivot toward and away from said first disclike member, said second disclike member having a circumferential peripheral groove in planar alignment with the periphery of said first disclike member;

roller means having peripheral grooves disposed adjacent said second disclike member for directing said cable away from said first disclike member and then out of said housing;

pressure applying means disposed about said first disclike member for biasing said cable toward the peripheral groove of said first member, said pressure applying means having first and second end portions, said first end portion being connected to said second arm of said first link and said second end portion connected by a second link to the extended end of said first arm of said first link;

a second link having a first end connected to the second end portion of said pressure applying means and a second end connected to the extended end of said first arm of said first link, and said second end extending a short distance beyond said first link;

a first spring having first and second ends, said first end

being connected to said housing and said second end being connected to the extended second end of said second link;

means pivotally connected to said housing for bearing against the cable and causing relative movement between the cable and the apparatus to cease;

means rotatably connected to the housing and responsive to the rotational velocity of the second disclike member for actuating the cable bearing means;

a shaft assembly rotatably mounted to the housing and having one end connected to the actuating means and the other end connected to a first gear;

a first gear mounted to said first shaft assembly;

a third link having first and second end portions, a first end portion pivotally connected to a second gear and a second end portion having an elongated slot and means for attaching a second spring;

a fourth link having two ends wherein one end is pivotally supported by said shaft assembly;

a second gear rotatably mounted to the other end of said fourth link so as to pivot relative thereto and operatively connected to the first gear and rotatable therewith;

means supported by said first arm of said first link between its extended end and its merged end for supporting said second disclike member;

a third gear connected to said second disclike member and operatively connected to the second gear and rotatable therewith to transmit rotational motion from said second disclike member to said actuating means; and

a second spring having first and second ends, said first end being connected to said housing, and said second end being connected to the attaching means of the second end portion of said third link, said second spring biasing said third link and thereby said second and third gears together when in one mode, and said third link being movable relative to said supporting means and expanding said second spring when in another mode.

4,139,179

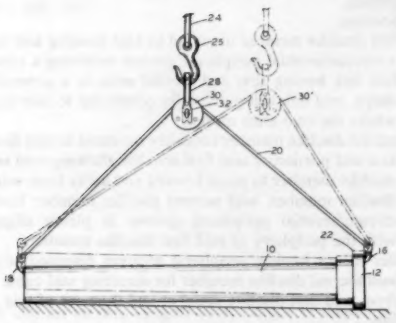
HOISTING APPARATUS

Zdzislaw Kukulski, 41074 Corriea Ct., Fremont, Calif. 94538

Filed Oct. 27, 1977, Ser. No. 845,955

Int. Cl.[2] B66D *1/36*

U.S. Cl. 254—192 **13 Claims**



1. An apparatus for safely hoisting an unwieldy load from a support on which it is resting comprising:

a cable or sling for securing to the load to be hoisted, said cable or sling having a generally circular configuration over the greater portion of its length;

means including a pulley having a grooved roller and a shackle for supporting said cable, said roller normally being freely rotatable in said shackle;

means for moving said pulley generally parallel to the support on which the load is resting and in a direction transverse to the axis of said roller without lateral movement of said load to determine the balance point of the cable with the load attached to it, and for subsequently lifting and transporting said load; and

mechanical means for locking said roller against rotation in said shackle in both directions, as said load is being transported.

4,139,180

APPARATUS FOR BREAKING UP LARGE CONSTRUCTION

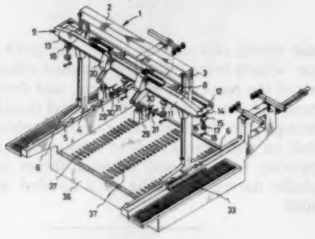
Mituo Itani, Chiba; Hiroyuki Kawashima, Yokohama; Takasuki Inoue, Kunitachi, and Mikio Maruyama, Tokyo, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,021

Claims priority, application Japan, Mar. 18, 1976, 51/29608; Mar. 18, 1976, 51/29609; Mar. 18, 1976, 51/29614

Int. Cl.[2] B23K *7/10*

U.S. Cl. 266—69 **7 Claims**



1. An apparatus for breaking up a large construction comprising:

a portal-shaped transporter movable in straddling relation to a construction to be broken up;

a frame body supported by said transporter and movable up and down;

a generally circular rail mounted on said frame body;

another rail mounted in the longitudinal direction of the frame body;

a suspension transporting device movable on said circular rail;

a gondola running on said another rail; and

a cutting device supported by the gondola and comprised of a guide rail for a cutter, in which said guide rail is mounted for rotary motion and said cutter is guided by means of said guide rail and moves on said guide rail.

4,139,181

APPARATUS FOR PREPARING METALLIC MAGNESIUM

Noboru Kawakami, Tokyo; Takeji Goto, Atsugi; Itsuo Hirano, Sagamihara, and Yoichi Itakura, Musashino, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tamaguchi, Japan

Filed Aug. 26, 1977, Ser. No. 828,203

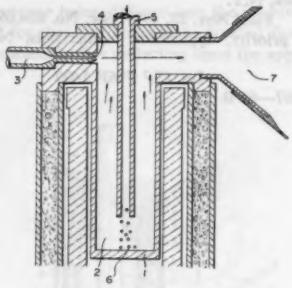
Claims priority, application Japan, Sep. 24, 1976, 51-113721

Int. Cl.[2] C22B *45/00*

U.S. Cl. 266—148 **5 Claims**

1. In an apparatus for preparing metallic magnesium in a reaction chamber by reducing magnesium oxide with carbon and rapidly cooling the reaction mixture, an improvement which comprises a cooling gas pipe; a nozzle, connected to said cooling gas pipe and facing into an upper part of said reaction chamber, having an inner diameter smaller than an inner diameter of said cooling gas pipe; and an outlet opening aligned with said nozzle at an upper part of the reaction chamber

opposite said nozzle, whereby the coolant is ejected from said nozzle at a high velocity to suck the reaction mixture from said



reaction chamber through said outlet opening without substantially impinging upon the reaction chamber wall.

4,139,182

SPRING DEVICE

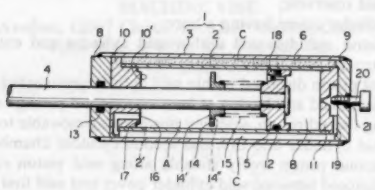
Toshiro Nagase, Sagamihara, and Hiroshi Miyazawa, Hiratsuka, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Nov. 24, 1976, Ser. No. 744,798

Claims priority, application Japan, Nov. 26, 1975, 50-159756[U]

Int. Cl.[2] F16F 9/49

U.S. Cl. 267—120 **1 Claim**



1. A spring device for controlling the opening or closing speed of a door or a window, comprising:

concentric inner and outer cylinders in a horizontal attitude and having an annular space therebetween;

a piston slidably mounted in the inner cylinder and a piston rod secured thereto and extending to the outside of the cylinder, said piston partitioning said inner cylinder into two oil chambers, said piston having a passage therethrough with a check valve therein for allowing flow of oil when the piston is moving in the contracting stroke of the device and blocking flow in the extension stroke of the device;

closure members closing opposite ends of the inner and outer cylinders respectively and having oil passages therein connecting said oil chambers respectively with said annular space;

pressurized gas enclosed in the upper portion of the annular space for applying a force on the piston for projecting the piston rod outwardly of said device;

a guide slidably supported on the piston rod in one oil chamber, said one oil chamber being the oil chamber through which the piston rod extends;

a spring disposed between said piston and said guide for normally locating said guide at a position spaced from the piston;

said guide having a face engaging said closure member in said one oil chamber for closing the oil passage from said one oil chamber when the piston rod moves outwardly a predetermined amount;

said closure member for said one oil chamber having a reduced diameter portion projecting into said one oil chamber and the oil passage for said one oil chamber opening into said one oil chamber through the face of said projection facing the interior of said one oil chamber;

said guide having a diameter less than the inner diameter of said inner cylinder and the guide face being large enough to cover said oil passage opening;

an auxiliary oil passage means for permitting a restricted flow of oil from said one oil chamber to said annular space when said guide engages said closure member, said auxiliary oil passage means having a groove with a cross-sectional area less than that of said oil passage in one of said faces, and said groove radially extending across said face from the position of said oil passage and opening at the outer, radial edge of said face, whereby said oil passage is prevented from being totally blocked by said guide when said guide abuts said projection on said closure member; and

an adjustable valve in the oil passage for the other oil chamber.

4,139,183

REFRACTORY-LINED SHAFT FURNACE CONTAINING FREE CARBON

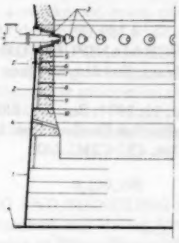
Jacobus van Laar, Santpoort, and Wilhelmus A. J. Kastelic, Ijmuiden, both of Netherlands, assignors to Hoogovens Ijmuiden, B. V., Ijmuiden, Netherlands

Filed Sep. 14, 1976, Ser. No. 723,284

Claims priority, application Netherlands, Sep. 17, 1975, 7510905

Int. Cl.[2] C21B 7/06

U.S. Cl. 266—197 **6 Claims**



1. Shaft furnace having a shell, a refractory lining along at least part of the shell's inner surface of a material which contains at least 50% free carbon, and which furthermore is provided with a water-cooled tuyere which is in contact with the refractory lining, including at least one extra layer of a material provided below the cooled tuyere in the refractory lining, over at least part of its thickness and substantially transversely to the direction from the layer towards the cooled tuyere which at the temperature of this layer during operation cannot locally react chemically with water and/or with the reaction products of water and carbon, said layer being of sufficient size to collect a considerable quantity of water thereby substantially preventing the flow of water from a damaged tuyere through the lining.

4,139,184

GAS STIRRER

Cecil B. Griffith; Jerry D. Thomas, both of North Royalton, and Thomas A. Wiktorowski, Parma Heights, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

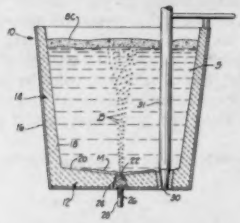
Filed Jun. 13, 1977, Ser. No. 805,912

Int. Cl.[2] C21C 7/00

U.S. Cl. 266—220 **2 Claims**

1. A bottom-pour transport ladle especially useful for inert gas stirring to mix materials into molten metal, which materials tend to settle when undissolved, said ladle having a steel shell

and a refractory lining that define a bottom and an upright surrounding wall, a first opening through a portion of the bottom of the steel shell surrounded by the upright wall, a gas-permeable plug in the refractory lining over said first opening and substantially smaller than the bottom of the ladle, said refractory lining defining an interior surface to the bottom of the ladle that slopes downward toward said plug so that materials that settle from the metal within the ladle will tend to



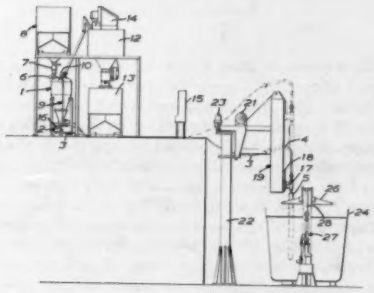
collect over the plug, a second opening through both the steel shell and the refractory lining of the bottom of the vessel surrounded by the upright wall, said second opening defining a pouring nozzle that opens into the interior of the ladle through said sloped surface at a higher level than the interior surface of the plug, said ladle being constructed to pour while upright, and means to control discharge from said second opening.

4,139,185

LANCE MANIPULATOR

Leif A. Henryson, Mörarp, Sweden, assignor to Kockums Construction AB

Filed Dec. 12, 1977, Ser. No. 859,586
Claims priority, application Sweden, Dec. 14, 1976, 7614042
Int. Cl.² C21C 7/00
U.S. Cl. 266—226 **1 Claim**



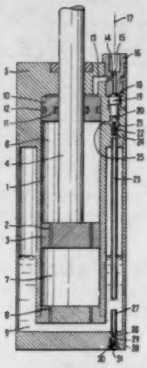
1. A manipulator for an immersion lance injection of finely-divided additive material into a melt, primarily a metal melt, said manipulator comprising a lance frame with a holder for the lance which may be raised and lowered including a lance magazine with a plurality of pipes which are vertically disposed and rotatably journalled about a common vertical shaft with each pipe having, at its upper end, a lance supporting arm which is freely pivotal upwardly from a substantial horizontal arrest position, one lance being supported in each of said pipes by said lance supporting arm, with said lance frame being movable between a position above the melt and a lance magazine position such that when in the latter position one lance may be directly grasped by the holder.

4,139,186

RETRACTABLE SHOCK ABSORBER

Pieter M. Postema, and Adrianus M. J. Gorissen, both of Oud-Beijerland, Netherlands, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,097
Claims priority, application Netherlands, Nov. 26, 1976, 7613194
Int. Cl.² F16F 5/00
U.S. Cl. 267—64 B **4 Claims**



1. In a retractable hydraulic telescopic shock absorber including

a damping medium reservoir;

a cylinder having a first passageway in communication with said reservoir;

a cylinder cover having a bore;

a piston rod disposed within said cylinder and extending through said bore;

a first piston disposed within said cylinder connected to said piston rod and having at least one second passage extending therethrough, said first piston being movable to divide said cylinder into first and second cylinder chambers;

a second piston freely slidable along said piston rod and disposed between said cylinder cover and said first piston; and

a source of pressure medium connected to said shock absorber for influencing the position of said second piston;

characterized in that,

said cylinder includes a third passageway of limited cross section communicating with said first chamber and said reservoir; and

valve means for opening said third passageway when said second piston is in a first position and for closing said third passageway when said second piston is in a second position.

4,139,187

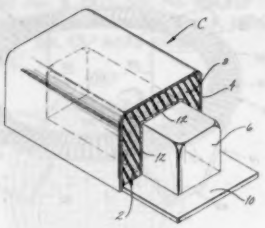
RESILIENT COMPOSITE FOAM CUSHION

Helmut G. Hanusa, Cape Girardeau, Mo., assignor to Textron, Inc., Providence, R.I.

Filed Nov. 12, 1976, Ser. No. 741,242
Int. Cl.² F16F 1/37
U.S. Cl. 267—145 **12 Claims**

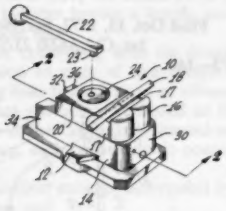
1. A composite cushion designed to comfortably support or serve as a rest for the human body or a part thereof, said cushion comprising: a core formed from a resilient foam material that is capable of regaining its original shape after a substantial deflection; a shell extended over the core, the shell being presented outwardly toward a load that is applied to the cushion and having substantial thickness beyond the core, the shell being formed from a resilient foam material that is likewise capable of retaining its original shape after a substantial deflection, but has a greater sag factor than the foam material

of the core; and a thin flexible membrane between the core and shell and being formed integral with the shell, but having a density greater than the foam material of either the core or shell, the membrane being diffused into the interstices of the foam material for the core so as to be bonded firmly to the core, the membrane further deflecting upon the application of



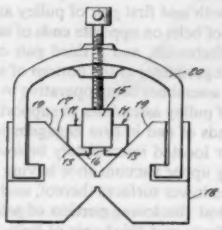
a load that deforms the shell toward the core and in deflecting serving to resist the load, whereby the membrane cooperates with the foam materials of the shell and core in supporting the load applied to the cushion and imparts rigidity to the composite cushion, the cushion having a sag factor greater than the sag factor for the foam material of either the core or shell, with the sag factor of the cushion being at least about 3.

4,139,188
MACHINE VISE
Aram Avedian, 12047 Clover Ave., Los Angeles, Calif. 90066
Filed Mar. 6, 1978, Ser. No. 883,385
Int. Cl.[2] B25B *1/08*
U.S. Cl. 269—196 **13 Claims**



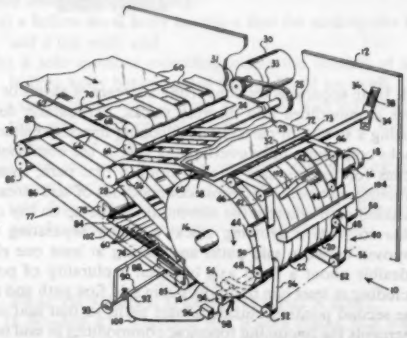
1. A machine vise comprising:
a body;
a fixed jaw mounted on top and at one end of said body;
a movable jaw mounted on said body and slidable toward and away from said fixed jaw, and having a vertically disposed central aperture therethrough;
a cam means disposed in said aperture and extending below said movable jaw;
an upper wedge and a lower wedge below said movable jaw arranged for locking cooperation within a longitudinal channel formed in said body, each of said upper wedge and said lower wedge having a vertically disposed central aperture therein;
said cam means being threadably received in said central aperture of said upper wedge, and having an eccentric lug extending into said central aperture of said lower wedge for moving said lower wedge into and out of locking relation with said upper wedge within said channel upon rotation of said cam means; and
said cam means having a cam surface which bears against a following surface in said central aperture of said movable jaw for urging said movable jaw toward said fixed jaw upon rotation of said cam means.

4,139,189
BLOCK CENTERS
Paul J. Wietrzyk, 1617 Wood St., N. Rear, Chicago, Ill. 60622
Filed Dec. 5, 1977, Ser. No. 857,292
Int. Cl.[2] B25B *1/24*
U.S. Cl. 269—272 **2 Claims**



1. A pair of V-block centers for use in conjunction with a conventional V-block, comprising, in combination, a pair of elongated bars, each having a cross section with a modified generally rectilinear cross section, each of said bars having one longitudinal corner of said cross section cut square along one edge to form an inside corner between a vertical wall and a sidewardly projecting foot extending therefrom, an opposite longitudinal corner of the cross section of said bar being cut off along another edge at a forty-five degree angle for resting on a forty-five degree inclined pair of surfaces of a V-groove of a V-block, whereby said bars may be positioned in a spaced-apart, parallel relationship and rest upon said angular surfaces of said V-block, a workpiece being positioned between said bars for being held therebetween, while a V-block clamp bears against said workpiece to hold them against said bars of said V-block centers, each of said elongated bars having a plurality of spaced-apart, transverse grooves on said sidewardly-extending foot, said foot of said two V-shaped block centers interfitting together to clamp a relatively thin workpiece.

4,139,190
FEEDING AND SHINGLING APPARATUS
Ferris G. Keyt, Trumbull, and Harold Silverman, Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jun. 13, 1975, Ser. No. 586,646
Int. Cl.[2] B65H *29/66*
U.S. Cl. 271—183 **3 Claims**



1. A feeding and shingling apparatus, comprising: a longitudinally extending housing, a drum rotatably received within said housing, a drive shaft rotatably received within said housing, means for rotatably said drive shaft, a belt disposed about said drum and said drive shaft, a sheet transport mechanism located above the upper portion of said drum and operative to feed sheets individually to the perimeter of said drum, an

axially extending pressure roller engaging the perimeter of said drum and being located adjacent said transport mechanism, a pair of first pulley assemblies located above said drum, said first pair of pulley assemblies cooperating with said pressure roller to support a first pair of belts on opposite ends of said drum and in firm engagement therewith, a second pair of pulley assemblies located on the perimeter of said drum and cooperating with said first pair of pulley assemblies to support a second pair of belts on opposite ends of said drum and in firm engagement therewith, and a third pair of pulley assemblies located on the perimeter at the bottom of said drum, said third pair of pulley assemblies being operative to cooperate with said second pair of pulley assemblies to support a third pair of belts at opposed ends of and in firm engagement with said drum, a sheet detector located immediately below said drum, a laterally extending upper vacuum shoe having a plurality of openings within the lower surfaces thereof, said upper vacuum shoe being located at the lower portion of said drum and spaced downstream from said third pair of belts, a first vacuum line communicating with said upper vacuum shoe, a laterally extending lower vacuum shoe located beneath said upper vacuum shoe and said drum, said lower vacuum shoe having a plurality of ports within the upper surface thereof, a second vacuum line communicating with said lower shoe, a valve located within said second vacuum line, a timer contacting said valve and said detector, said timer being operative to actuate said valve in response to said detector, and means located downstream from said vacuum shoes for conveying sheets away from said drum.

4,139,191

APPARATUS FOR CONVERTING A STREAM OF SHEETS INTO DISCRETE STACKS

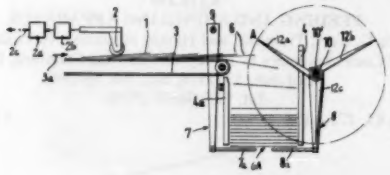
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG., Hergiswil, Switzerland

Filed Apr. 14, 1977, Ser. No. 787,574

Claims priority, application Switzerland, Apr. 23, 1976, 5116/76

Int. Cl.[2] B65H *29/34*

U.S. Cl. 271—189 **10 Claims**



1. In an apparatus for converting a stream of sheets or analogous commodities into discrete stacks, particularly for converting a stream of partially overlapping imprinted sheets into stacks containing fully overlapping sheets, the combination of means for feeding said stream along a first path; means for directing successive foremost commodities of said stream into a second path wherein the commodities pile up on top of each other to form a growing stack; a rotary separating device disposed between said paths and having at least one element indexible about a fixed axis between a plurality of positions including at least one first position in said first path and at least one second position outside of said paths so that said element intercepts the oncoming foremost commodities in said one first position thereof and allows the thus intercepted commodities as well as the next-following foremost commodities to enter said second path in said one second position thereof, said element constituting a support for said intercepted commodities in said one first position thereof; and drive means for repeatedly indexing said element to said positions, including means for indexing said element to said one first position at first speed and to said one second position at a different second speed.

4,139,192

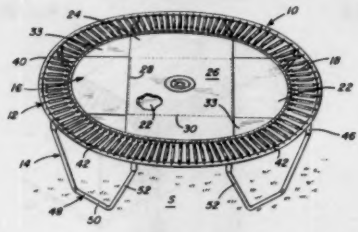
ROUND TRAMPOLINE WITH U-SHAPED LEG

Harold L. McNeil, 3120 Flastacowo Rd., Tallahassee, Fla. 32302

Filed Sep. 17, 1976, Ser. No. 724,257

Int. Cl.[2] A63B *5/18*

U.S. Cl. 272—65 **5 Claims**



1. A round trampoline comprising a sectional, substantially circular frame including a frame rail formed by a plurality of arcuate sections, means joining the ends of adjacent sections, a substantially rigid U-shaped leg underlying the frame rail and bridging the joint between each pair of adjacent sections with the U-shaped leg including upper ends, means releaseably securing the tupper ends of each leg to adjacent sections of the frame rail in longitudinally spaced relation to the joint between adjacent sections of the frame rail for preventing relative rotation between adjacent sections of the frame rail and preventing lateral bending of the frame rail.

4,139,193

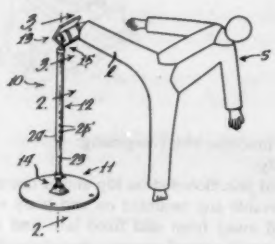
KICK TRAINING AID FOR KARATE

David P. Felber, Rte. 2, Box 128, Manteno, Ill. 65090, and Daniel M. Burrello, 203 W. Marquette Ave., Berlin, Wis. 54923

Filed Oct. 13, 1977, Ser. No. 841,728

Int. Cl.[2] A63B *23/04*

U.S. Cl. 272—146 **9 Claims**



1. A kick training aid for karate comprising, in combination:
a fixed base having a top surface;
an adjustable length pole the length of which may be adjusted to approximates the height to which a person training for karate is to kick said pole having a first end and a second end;
mounting means connecting said first end of said pole to the top surface of the fixed base for universal swinging movement thereon for rotation of said pole about its longitudinal axis;
a foot-piece having a sole plate for the sole of a persons foot;
connecting means secured to said sole plate and mounting said foot-piece on said second end of said pole for universal swinging movement thereon and for rotation of said foot-piece relative to an axis perpendicular to said sole plate;
and means for detachably securing a person's foot to said

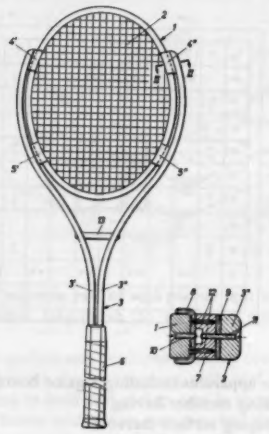
foot-piece with the sole of a persons foot against said sole plate.

4,139,194

RACKET FOR STRIKING A BALL

Josef Fischer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Ried in Innkreis, Austria

Filed Jun. 8, 1977, Ser. No. 804,519
Claims priority, application Austria, Jun. 8, 1976, 4161/76
Int. Cl.² A63B *49/02*
U.S. Cl. 273—73 C **5 Claims**



1. A racket adapted to carry means for striking a ball and comprising:

a closed hoop adapted to carry the means for striking a ball;

a shaft and handle member having a handle portion and a bifurcated extension; and

a plurality of elastic connecting links for connecting said bifurcated extension to sides of said closed hoop, said elastic connecting links being formed as vibration absorbing buffer elements and being positioned so that at least one of said elastic connecting links is situated on each side of said closed hoop, each of said elastic connecting links comprising:

a block formed of resilient material deformable by vibration of said closed loop, and

two supporting plates positioned on opposite sides of said block with at least one of said supporting plates secured to said block, a first of said supporting plates being secured to said closed hoop and a second of said supporting plates being secured to said bifurcated extension.

4,139,195

AUTOMATIC POWDER DISPENSER FOR TENNIS RACKET HANDLES AND THE LIKE

William R. Dreesen, and Lillian Dreesen, both of FF-10, Vista Pines 2600 SE. Ocean Blvd., Stuart, Fla. 33494

Filed Sep. 27, 1976, Ser. No. 727,286
Int. Cl.² A63B *49/08*
U.S. Cl. 273—75 **13 Claims**

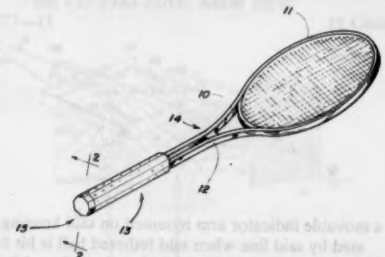
1. In an article having a handle portion adapted to be grasped by a hand, the improvement comprising:

a chamber within the handle portion;

a foraminous cartridge having an interior and an exterior and being contained within said chamber, said cartridge having several holes extending between and communicating with the interior and exterior of the cartridge;

particles of powdered material contained within said cartridge, the size of said particles being smaller than the size of the holes in said cartridge to permit said particles to pass through the holes from the interior of said cartridge; and

passageways communicating with said chamber with the exterior of the handle portion intermediate the ends of the



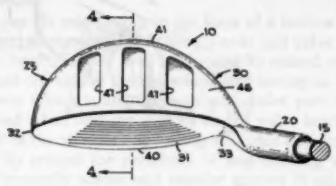
article, said passageways being normally open and having a size greater than the size of said particles to permit said particles to pass therethrough from said chamber to the exterior of the handle portion, said passageways extending transverse of the handle axis.

4,139,196

DISTANCE GOLF CLUBS

Edward J. Riley, Pebble Beach, Calif., assignor to The Pinseeker Corporation, Santa Ana, Calif.

Filed Jan. 21, 1977, Ser. No. 761,052
Int. Cl.² A63B *53/04*
U.S. Cl. 273—164 **14 Claims**



1. A distance golf club comprising:

(A) a hosel;

(B) a shaft having the lower end thereof received by said hosel in fixed relation; and

(C) a club head fixed to said hosel for movement therewith, said club head comprising:

(a) a hollow steel body having a face for striking the ball and a top wall; and

(b) a sole member extending along the bottom of said hollow body between said face and said top wall,

(c) said hollow body having a bottom wall surrounding said sole member and having a plastic core therein disposed on said bottom wall,

(d) said top wall having a smooth, gradually exposed curved surface extending between the upper portion of said face and said bottom wall to provide improved aerodynamic characteristics for said club head.

4,139,197

PRACTICE DEVICE FOR HITTING A BALL

Owen D. Windall, 877 Westfield Rd., Scotch Plains, N.J. 07076

Filed Jan. 6, 1978, Ser. No. 867,587
Int. Cl.² A63B *69/36*
U.S. Cl. 273—185 C **18 Claims**

1. A practice device for hitting a ball, comprising:

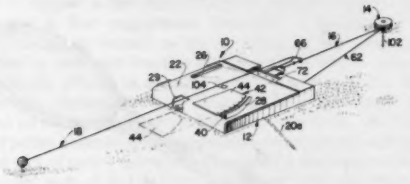
a housing and means for attaching said housing in a relatively fixed position,

a line connector and means for attaching said connector in a relatively fixed position spaced from said housing,

a guide extending between said housing and said line connector,

a tethered ball mounted for movement on said guide,

a line connected to said tethered ball, and



a movable indicator arm mounted on said housing and actuated by said line when said tethered ball is hit for indicating the equivalent distance that the tethered ball is hit.

4,139,198

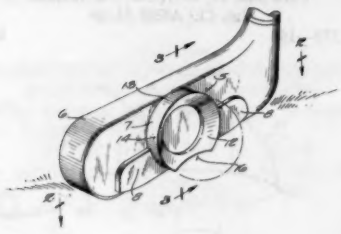
TRAINING DEVICE FOR IMPROVING ACCURACY IN HITTING A BALL

James G. Kanavas, 38751 Delafield Rd., Oconomowoc, Wis. 53066

Filed Oct. 20, 1977, Ser. No. 843,981

Int. Cl.[2] A63B *69/36*

U.S. Cl. 273—186 A **2 Claims**



1. A training device to help golfers gain accuracy in meeting the ball as it is struck with a golf club, said device comprising:

A. a rigid annulus having a flat back surface and a concave substantially conical front surface, said surfaces meeting to form a relatively sharply defined inner edge for the annulus;

B. attaching wings projecting in opposite directions from the annulus,

said attaching wings having flat back surfaces that are coplanar with the back surface of the annulus;

C. means on said attaching flanges by which the annulus is securable to the face of a golf club head in a predetermined position encircling and centered with respect to the spot on the face of the club head at which contact with the ball should occur as it is struck for the ball to travel along its intended path;

D. a guide surface on said annulus to facilitate placement of the annulus in said predetermined position on the head of a golf club,

said guide surface being substantially flat and extending across the annulus in a plane that is substantially perpendicular to the flat back surface of the annulus and that chordally intersects the annulus radially outwardly of its inner edge at a distance from the center of the annulus such that upon alignment of said guide surface with the lower edge of a gold club head during securement of the annulus thereto, the annulus can be quickly and easily properly positioned on the club head; and

E. the diameter of the inner edge of the annulus being smaller than that of a conventional golf ball but large enough to permit contact between the ball and the face of the club head when such contact is made at said predetermined spot on the face of the club head.

4,139,199

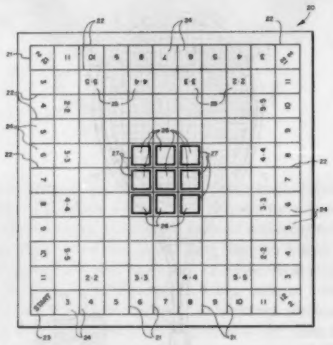
BOARD GAME APPARATUS

Gordon E. Drummond, 355 North 200 West, Salt Lake City, Utah 84103

Continuation of Ser. No. 656,153, Feb. 9, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,280

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—243 **13 Claims**



7. A game apparatus including a game board comprising

a flat backing member having

a flat playing surface thereon;

said playing surface including

a grid forming grid spaces and grid rows on the playing surface;

numbers representing numbers that can be obtained with chance selection means arranged in grid spaces forming a peripheral edge of the grid;

a plurality of marked central grid spaces located within the peripheral edge, each of said marked central grid spaces being intercepts of grid rows containing at least one of the numbered peripheral edge spaces;

designated doubles grid spaces in the grid adjacent to numbered peripheral edge spaces containing a number that can be formed by doubling another number;

a plurality of playing pieces to be positioned on the game board whereby they represent game players; and

chance selection means having means thereon for designating numbers corresponding to the numbers arranged in the grid spaces forming the peripheral edge of the grid.

4,139,200

APPARATUS FOR SUPPORTING A PICKUP ARM ON A DISC PLAYER

Motoi Iyeta, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 21, 1977, Ser. No. 789,515

Claims priority, application Japan, Apr. 27, 1976, 51-48323

Int. Cl.[2] G11B *3/10*

U.S. Cl. 274—23 A **13 Claims**

1. A disc player, comprising:

(A) a turntable for rotatably supporting a disc about a predetermined axis;

(B) a carriage moveable along a linear path spaced from said axis;

(C) driving means for moving said carriage along said linear path;

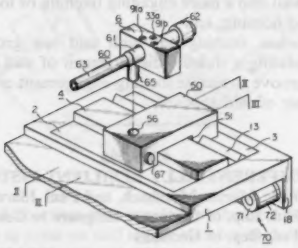
(D) a pickup arm, one end of said pickup arm adapted to carry a pickup cartridge;

(E) a pickup arm supporting block;

(F) a support mechanism coupled to said supporting block, said support mechanism supporting said pickup arm in such a manner that said pickup arm is pivotable in a horizontal and a vertical direction when said block is coupled to said carriage;

(G) offset angle detection means coupled to said supporting block for generating a deviation signal representing the deviation of said pickup arm from an orientation substantially perpendicular to said linear path;

(H) pickup arm lifting means coupled to said supporting block for pivoting said pickup arm in a direction which



will cause said one end of said pickup arm to rise above said turntable responsive to an input signal applied thereto;

(I) adjustable pickup arm positioning means coupled to said supporting block for cooperating with said pickup arm lifting means to hold said pickup arm in an upper locked position wherein said pickup arm is locked along a predetermined horizontal and vertical orientation; and

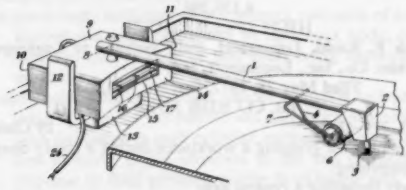
(J) coupling means for releasably coupling said pickup arm supporting block to said movable carriage, said coupling means also for adjusting the level of said supporting block relative to said carriage.

4,139,201

DUST REMOVING METHODS AND APPARATUS

Francis G. S. English, "Grinstead", King James's La., Henfield, Sussex, England

Filed Sep. 28, 1977, Ser. No. 837,316
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—47 **11 Claims**



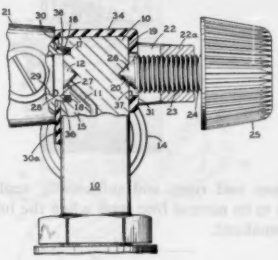
1. A record cleaner comprising an arm carrying a brush and a pad, an ionising apparatus operative to emit negative air ions, means for pivotally-mounting said arm on the ionising apparatus and means in said ionising apparatus for emitting negative air ions over said record in the direction generally parallel to the longitudinal axis of the arm said brush and pad being disposed on said arm in contact with the surface of said record whereby the combined action of said ions, brush and pad disturb, remove and hold dust from the surface of said record.

4,139,202

O-RING RETAINER CAP AND VALVE PROTECTOR

Keith D. Bernkrant, P.O. Box 520691, Miami, Fla. 33152

Filed Sep. 12, 1977, Ser. No. 832,295
Int. Cl.[2] F16J *15/00*; A61M *16/00*
U.S. Cl. 277—11 **11 Claims**



1. For use with a valve head on a diver's tank and an outlet flow regulator releasably attached to said valve head, said valve head having a flow passage therein leading from the interior of the tank and on one side thereof having an outlet port connected to said flow passage and an annular groove extending around said outlet port, a deformable resilient O-ring seated in said groove, and said outlet flow regulator having a rigid annular projection on its inlet side which fits into said groove and engages and deforms said O-ring when the outlet flow regulator is attached to the valve head, the improvement which comprises:

a retainer cap for said O-ring in the form of a hollow body shaped and dimensioned to fit snugly over said valve head, said cap having a side wall positioned to extend snugly across said one side of the valve head and having an opening therein which is aligned with said outlet port in the valve head when said cap is fitted on the valve head, said side wall of the retainer cap having a flexible and resilient annular lip around the periphery of said opening which extends inwardly across said annular groove in said one side of the valve head when the cap is fitted thereon, said annular lip being readily deformable outwardly by said rigid annular projection on the outlet flow regulator when the outlet flow regulator is attached to the valve head, and said annular lip springing back inwardly across said groove to retain the O-ring therein when the outlet flow regulator is detached from the valve head.

4,139,203

LABYRINTH TYPE ROTARY SEAL WITH INTERMITTENT FEATURE OF CONTACT TYPE SEAL

Stephen N. Garrison, Anderson, S.C., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 25, 1977, Ser. No. 790,787
Int. Cl.[2] F16J *15/32*; F16C *1/24, 33/80*
U.S. Cl. 277—56 **17 Claims**

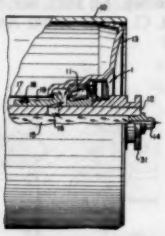
1. A seal for protecting a bearing mounted between a shaft and a concentric rotatable body, comprising:

an outer ring adapted for engagement by the rotatable body and having at least two inwardly extending but spaced apart annular walls;

an inner ring adapted for engagement by the shaft and having an annular wall extending outward between the spaced walls of the outer ring, the spaces between said annular walls and the rings forming a continuous labyrinth effective to restrain the passage of lubricant or contaminant through the seal, said outer ring being freely rotatable without touching said inner ring; and

a resilient annular disc connected to the inner ring and extending radially therefrom in spaced and dimensionally overlapping relation with said outer ring during normal rotation, said disc being sufficiently flexible to deflect

under increased lubricant pressure into contact with said outer ring to form a barrier to the passage of lubricant



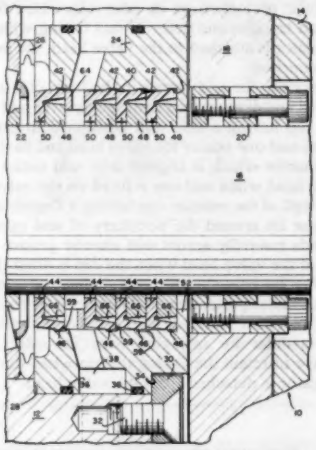
between said rings and sufficiently resilient to recover again to its normal free state when the lubricant pressure is normalized.

4,139,204

SEAL HOUSING MEANS

Frank D. Howe, Painted Post, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 4, 1976, Ser. No. 738,652
Int. Cl.[2] F16J *15/40*; F16D *17/00*
U.S. Cl. 277—123 **8 Claims**



1. Means for housing a seal for fluid-sealing a shaft, comprising:

first means comprising an annular housing for enveloping a portion of a shaft; and

second means comprising a stiff, albeit slightly resilient and generally cup-shaped, circular seal retainer for receiving a seal therewithin; wherein

one of said first and second means has a plurality of spaced-apart grooves formed therein;

the other of said first and second means has a lip formed thereon;

any one of said grooves and said lip comprising, respectively, first and second locking elements, for locking said seal retainer within said housing;

said retainer is disposed within said housing with said lip reflexly or resiliently self-locked in one of said grooves;

said retainer comprises a circular, generally flat and centrally-apertured base, and an annular wall rising from the periphery of said base, said base and wall cooperating to define an annular, walled recess within said retainer in which to receive a seal;

an outermost surface of said wall carries one of said locking elements; and further including

an annular seal, having an external periphery, disposed in said recess; wherein

said annular wall has an inner surface;

said periphery and said inner surface are spaced-apart to define a void therebetween;

said periphery comprises uniformly diminishing diameters; and

said inner surface of said wall comprises uniformly increasing diameters, defining said void between said seal and retainer wall with an outwardly diverging cross section, whereby pressured fluid introduced into said void urges said wall into a more engaging latching or locking thereof to said housing; and

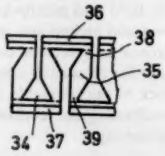
ramp means, contiguous with said one groove, for accomodating a slidable displacement of said lip from said one groove to enable locking engagement of said lip with another of said grooves.

4,139,205

CIRCUMFERENTIALLY RESILIENT PISTON RING

Gerhard Dück; Martin Morsbach, and Paul Jöhren, all of Burscheid, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,851
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2711018
Int. Cl.[2] F16F *9/36*; F16J *9/20*
U.S. Cl. 277—140 **14 Claims**



2. In a piston ring formed of a sheet metal annulus having a base and opposite flanks terminating in flank edges; means defining a series of spaced, circumferentially distributed slots extending, when viewed circumferentially, alternatingly from the one and the other flank edge into the base and being in an overlapping relationship therein; the slots dividing the flanks into a series of flank segments and the base into a series of resilient webs; the improvement comprising means providing, in said webs, web portions being more readily deformable to bending forces than all the other parts of the piston ring.

4,139,206

HIGH SPEED CHUCK

Kenneth F. Knohl, Logansport, Ind., assignor to Logansport Machine Co., Inc., Logansport, Ind.

Filed May 25, 1977, Ser. No. 800,203
Int. Cl.[2] B23B *31/14*
U.S. Cl. 279—1 C **19 Claims**

1. A chuck for gripping a workpiece during a rotary operation comprising:

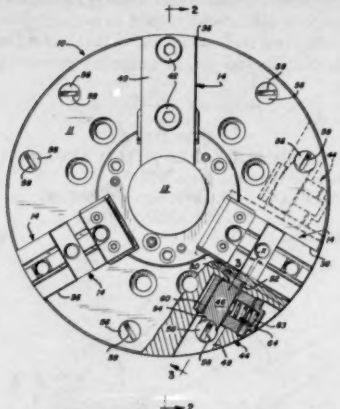
a body including a central axis:

jaw means mounted on said body and movable radially relative to said axis to grip said workpiece;

actuation means for actuating said jaw means;

toggle means for locking said jaw means in a workpiece gripping position during rotation of said chuck, said toggle means including a toggle member positioned on said body transverse to said jaw means with a first end abutting said jaw means for applying a centrifugally actuated transverse locking force on said jaw means during rotation of said chuck;

biasing means for biasing said toggle means to a jaw unlocking position upon termination of the rotation of said chuck; and an eccentric pin rotatably mounted on said



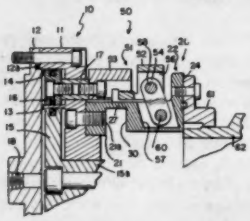
body and abutting said toggle member, said pin being rotatable to press on said toggle member to thereby move said member toward said jaw thereby applying an initial transverse locking force on said jaw.

4,139,207

DOUBLE GRIP AIR CHUCK

Larry E. Grimes, 6649 St. James, Indianapolis, Ind. 46227

Filed Jan. 30, 1978, Ser. No. 873,145
Int. Cl.[2] B23B *31/30*
U.S. Cl. 279—4 **10 Claims**



1. A fluid actuated chuck to rotate the work piece about an axis of rotation with two pairs of surfaces adaptable to engage a work piece, each of said pairs of surfaces being independently operable, said chuck comprising

a chuck body including means forming two pairs of surfaces carried and rotatably driven by the chuck body, each of said surfaces of each of said pairs being independently movable;

said chuck body including a pair of cylinders and passageways to deliver fluid thereto and carrying a pair of pistons with one piston in each cylinder, each of said pistons being free to move in the direction of the axis of rotation in response to fluid pressure within its cylinder; and

a first drive train forming a mechanical link between one of said pair of pistons and one of said pairs of surfaces, and a second drive train forming a mechanical link between the other of said pair of pistons and the other of said pair of surfaces;

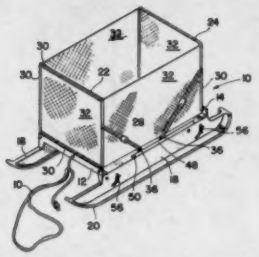
said first and second drive trains transmitting movement of said pair of pistons in response to the application of fluid to said chuck independently to said one pair of surfaces and to said other pair of surfaces to permit engagement and rotation of the work piece.

4,139,208

MULTIPURPOSE LIGHT CART

George Kaley, and Bernadette Kaley, both of 736 Oak Ave., River Edge, N.J. 07661

Filed Sep. 12, 1977, Ser. No. 814,701
Int. Cl.[2] B62B *13/18*
U.S. Cl. 280—9 **1 Claim**



1. A cart comprising a collapsible load compartment, a pair of spaced ski-like runners fixed to said compartment; a wheel train retractable mounted on each runner; means on said runners for raising and lowering said wheel train to convert said cart to a rolling vehicle and locking means operatively associated with said runners and said trains to lock said trains in lowered and raised positions, wherein

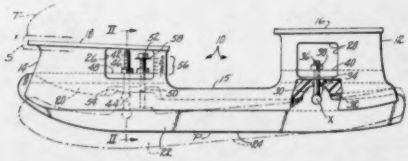
said locking means comprise an opening in each runner and a bolt secured to each train passing through said opening and a nut threaded on said bolt and tightenable against the outside of each runner.

4,139,209

ADJUSTABLE SHOE-SKATE ASSEMBLY

Donald R. Humphreys, 11 Pequot Rd., Marblehead, Mass. 01945

Filed Dec. 8, 1977, Ser. No. 858,733
Int. Cl.[2] A63C *1/30*
U.S. Cl. 280—11.12 **12 Claims**



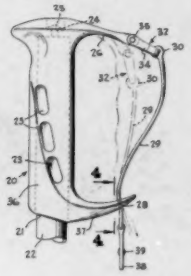
1. An assembly for adjustably mounting a skate blade to a boot or shoe comprising a carrier, the carrier including a heel support portion, a forepart support portion, and a longitudinal strut for interconnecting said heel and forepart portions, the carrier being formed with a longitudinal kerf having a width substantially that of the blade for movably receiving an upper part of the blade while a lower part thereof remains exposed, means associated with the heel support portion for holding the blade for pivotal movement about an axis extending widthwise of the blade, and means associated with the forepart support portion for suspending the blade for adjustable angular movement about said axis.

4,139,210

SKI POLE GRIP WITH ELASTIC STRAP

Jon I. Allsop, 3157 Sunset Way, and James D. Allsop, 2144 Dellesta Dr., both of Bellingham, Wash. 98225

Filed May 19, 1977, Ser. No. 798,469
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—11.37 H **9 Claims**



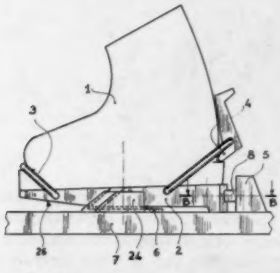
1. In a ski pole grip, a handle having a ski pole connected thereto, a projecting portion integral with the upper end of said handle, there being an opening in the outer end of said upper projecting portion, a projecting section integral with the lower end of said handle and arranged in spaced-apart relation with respect to said projecting portion, said projecting section having a slightly curved formation and being provided with a slot in its outer end, an elastic strap having a bushing on its upper end, and said bushing having an opening therein, a bracket having a first section extending through the opening in said bushing, said bracket further including spaced-apart side sections, a pin member extending through the opening in the upper projecting portion and said pin member being connected to the side sections of said bracket, said pin member providing a swivel connection between the strap and the upper projecting portion of the handle, said strap having a width and thickness so that it is snuggly mounted and received in the slot in the lower projecting section on the handle.

4,139,211

SAFETY BINDING FOR SKI BOOT

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed May 11, 1977, Ser. No. 795,758
Claims priority, application France, May 14, 1976, 76 14710
Int. Cl.[2] A63C *9/08*
U.S. Cl. 280—618 **15 Claims**



1. A safety binding for coupling a ski boot to a ski, comprising
   (a) a vertical pivot integral with said ski and disposed, upon fitting of the ski to said boot, under the sole of said boot;
   (b) retention means hinged in relation to said pivot;
   (c) means associated with said boot for coupling said retention means to said boot, when said ski is fitted to said boot, and for completely freeing said retention means from said boot in safety release position, said coupling means extending at least partly under said boot; and
   (d) locking means, actuating said coupling means, for locking said coupling means with respect to said retention means upon fitting said ski to said boot, and for locking said boot with respect to said ski, in a manner permitting safety release.

4,139,212

COLLAPSIBLE BUMPER HITCH APPARATUS

Dean L. Beebe, Minneola, Kans. 67865

Filed Oct. 25, 1977, Ser. No. 845,292
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—491 D **10 Claims**

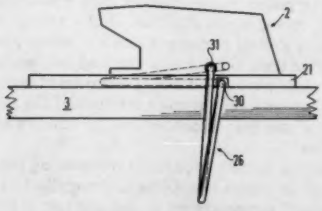
1. A collapsible bumper hitch apparatus adapted to be connected to frame members on a vehicle adjacent to a bumper member, comprising:
   (a) a hitch assembly including a first hitch arm assembly having one end releasably connected to one end of a second hitch arm assembly;
   (b) a connector means to pivotally connect other ends of said first hitch arm assembly and said second hitch arm assembly to respective ones of the frame members on the vehicle;
   (c) said first hitch arm assembly on said one end having a connector assembly adapted to be connected to a connector member on a second vehicle and an anchor assembly connected to said connector assembly; and
   (d) said anchor assembly having a lock rod connected with said one end of said second hitch arm assembly when in the extended, towing position, and connected with said other end of said second hitch arm assembly when in the folded, storage positon above the bumper member.

4,139,213

SKI BRAKE

Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy Haute-Savoie, France

Filed Mar. 25, 1977, Ser. No. 781,447
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2613016
Int. Cl.[2] A63C *7/10*
U.S. Cl. 280—605 **7 Claims**



1. In combination with an elongated ski and a ski binding

having a support part fixed on said ski and toe and heel clamps at least one of which has a clamp part longitudinally displaceable on said ski between a hold position securing a skiboot to said ski and a release position disengaged from a skiboot, a ski brake comprising:

an elongated braking element displaceable on said ski between a rest position extending generally parallel to said ski and a braking position extending transverse to and projecting downwardly beyond a lower surface of said ski, said braking element being an elastically deformable wire of generally U-shape having a pair of legs each with a free end and a bight joining the other ends of said legs, one of said free ends being pivoted in said support part; and means for pivotally connecting the other of said free ends in said clamp part and

for displacing said braking element into said braking position on displacement of said clamp part into said release position and for displacing said braking element into said rest position on displacement of said clamp part into said hold position.

4,139,214

SKI

Hans Meyer, Säntisstrasse 9, 8000 Munich 82, Fed. Rep. of Germany

Filed Jan. 19, 1977, Ser. No. 760,820

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601951; Aug. 2, 1976, 2634748

Int. Cl.[2] A63C *5/00*

U.S. Cl. 280—607 **12 Claims**

1. A ski assembly, which comprises:

a ski;

a spring board, disposed on a central section of said ski, arranged along the longitudinal axis of said ski on an upper surface thereof;

said spring board comprising a front hinged leg connected to said ski; and,

a rear hinged leg, for carrying a ski binding, connected to said front leg of said spring board such that said rear hinged leg is vertically swingably movable wherein said hinged front leg of said spring board is a leaf spring J-shaped with respect to the longitudinal axis of said ski and wherein said ski assembly further comprises a rear ring-shaped leaf spring interconnecting said rear hinged leg of said spring board and an upper surface of said ski.

4,139,215

AUTOMOBILE SAFETY BELT

Laurent Guitard, Reilhaguet, 46200 Souillac, and Georges Fenelon, Vielle Route de Paris, 46000 Cahors, both of France

Filed Aug. 23, 1977, Ser. No. 826,988

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—744 **10 Claims**

1. Automobile safety belt to hold an occupant in seated position on the vehicle seat, and to permit safe release of the occupant in case of necessity, this belt comprised of a belt to hold the occupant, anchoring means at three points—one central anchoring point and two side anchoring points—to hook said belt on the vehicle, and a maneuverable attachment buckle situated beside the central anchoring point to allow for normal situation attachment and detachment of the belt, said safety belt being characterized by the following:

an emergency buckle interposed between the belt and one of the side anchoring points, this emergency buckle including a first hooking element to which the belt is attached, a second hooking element, connected to the anchoring point and adapted to be hooked into the first element, and a movable blocking element carried by the first element and provided to be used in two positions, one blocking position in which this element blocks the two hooked together hooking elements, and one withdrawn position in which this element frees the second hooking element,

a flexible traction control on the movable element of the

emergency buckle to permit traction to be exerted thereon, drawing it from its blocking position into its withdrawal position, said flexible control running along the belt by connection means which hold it along the belt, and said flexible control is provided at its end opposite the emergency buckle, with grip means provided for gripping and maneuvering the buckle.

4,139,216

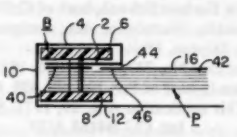
WRAP AROUND COVER

Donald F. Saint Clair, Fenimore Rd., R.D.1, Medford, N.J. 08055

Filed Aug. 4, 1977, Ser. No. 821,737

Int. Cl.[2] B42D *3/04*

U.S. Cl. 281—4 **16 Claims**



1. A wrap around cover for enclosure of a stack of papers having a front, a back, a linear spine edge and a front edge which are secured by a mechanical binder at the spine edge comprising

an integral cover blank which is defined by

a binding panel underlying at least a part of the binder and covering a portion of the front of the stack, the binding panel being adapted to be secured to the paper stack by the binder, the binding panel terminating in a linear edge, the linear edge of the binding panel being adapted to overlie the linear spine edge of the stack of papers;

a spine panel connected directly or indirectly with said binding panel and covering the said spine edge,

a back panel contiguous with said spine panel and covering the said back

an end panel contiguous with the back panel and covering the said front edge; and

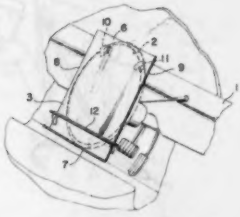
a front panel contiguous with the end panel and covering the front of the stack of papers, the said front panel terminating in a linear free edge, the front panel linear edge being adapted to overlie at least a part of the binding panel.

4,139,217

VEHICULAR DESK UNIT

Gerald A. Jamison, 239 Dahlia Ave., Dorval, Quebec, Canada (H9S 3N6)

Filed Dec. 19, 1977, Ser. No. 861,628
Int. Cl.[2] B42D *17/00;* B60R *7/08*
U.S. Cl. 281—15 A 3 Claims



1. A vehicular desk unit for an automotive vehicle having a steering wheel, said vehicular desk unit comprising

a board-like desk member having a substantially planar writing surface and a spaced opposite substantially parallel substantially planar back surface, said desk member having a top, a bottom and sides;

fastening means affixed to the back surface of the desk member for removably affixing said desk member to the steering wheel in substantial juxtaposition with said steering wheel and substantially parallel to said steering wheel whereby a person seated behind said steering wheel may comfortably use said desk member as a desk;

a ledge member extending across the desk member and slidably mounted on said desk member for movement from top to bottom thereof; and

securing means for releasably securing the ledge member to a desired position on the writing surface of the desk member.

4,139,218

PROCESS FOR PRODUCING PRESSURE-SENSITIVE CARBONLESS MANIFOLDS

Gerald T. Davis; Gerhart Schwab, both of Chillicothe, Ohio, and Dale R. Shackle, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 747,682, Dec. 6, 1976, which is a continuation-in-part of Ser. No. 684,459, May 7, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,533
Int. Cl.[2] B41M *5/22*
U.S. Cl. 282—27.5 2 Claims

1. A process for the production of a manifold carbonless form having one or more surfaces coated with chromogenic material comprising:

(a) providing a continuous paper substrate;

(b) marking at least one surface of said paper substrate with a pattern;

(c) preparing a non-aqueous, solvent-free, liquid chromogenic coating composition by mixing a microencapsulated chromogenic material with a hot melt suspending medium, said chromogenic material being an electron donating color precursor, said hot melt suspending medium being water insoluble and having a melting point of from about 60° C. to about 140° C., said hot melt suspending medium being characterized by the presence of one or more functional groups selected from the group consisting of: carboxyl, carbonyl, hydroxyl, ester, amide, amine, heterocyclic groups and combinations thereof to impart polarity thereto, said hot melt suspending medium being further characterized by having a weight loss rating of less than about 15 mg/g./hr. at 90° C. on a thermogravimetric scale when a 20.0 mg. sample of said hot melt suspending medium is analyzed and a heat resistance characteristic as measured by typewriter intensity decline on a seven day period of less than about 15 units loss when initial typewriter intensity is less than about 75 typewriter intensity units;

(d) coating said liquid chromogenic coating composition onto said paper substrate, said coating composition being applied at a coat weight of from about 1.0 pounds to about 8.0 pounds per 3300 square feet of paper substrate;

(e) setting said coated paper substrate by cooling said coating composition;

(f) combining said marked, coated paper substrate with at least one additional paper substrate to form a plurality of paper substrates, each of said additional paper substrates being characterized by having at least a portion of at least one surface coated with at least one non-aqueous, solvent-free coating of said microencapsulated chromogenic material, said coating being set;

(g) collating said plurality of marked, coated paper substrates; and

(h) placing said collated paper substrates in contiguous relationship to one another to create a manifold carbonless form.

4,139,219

MONEY MARKING SYSTEM

George N. Herndon, Macon, Ga., assignor to Marked Money Systems, Inc., Macon, Ga.

Filed Nov. 21, 1975, Ser. No. 634,060
Int. Cl.[2] B42D *15/00*
U.S. Cl. 283—57 3 Claims

1. A method of preventing theft, detecting theft and permitting stolen money to be traced to its source comprising:

stamping on the edge of each bill received by a business in indelible ink, a two part code including a date and a code indentifying the business, utilizing a stamp having a width less than one-quarter the length of a bill, said stamping being done successively by a plurality of businesses with said stamping done in sequence by each business as it receives the bill with the first business to stamp the bill starting at the upper lefthand edge of one side of the bill and continuing stamping on the other side when the one side is filled permitting each bill to be stamped ten times on each side whereby, upon a theft, the date and identifying number of the last business to have had the bill can be distributed permitting others receiving the money to identify it as stolen and to permit return of the money to the proper owner when the theft is detected.

4,139,220

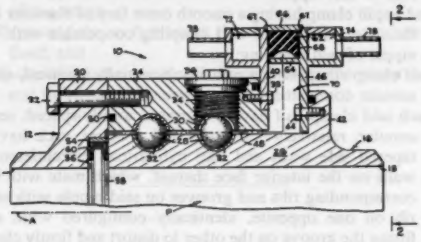
SWIVEL JOINT SEALING SYSTEM

Armand L. Faccou, Santa Ana, and Harold M. Gibbons, Long Beach, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Feb. 7, 1977, Ser. No. 766,393
Int. Cl.[2] F16L *55/00;* F16J *15/00*
U.S. Cl. 285—13 12 Claims

1. Sealing mechanism for a swivel joint of the type having a first housing to define a first passage portion, a second housing rotatably mounted to said first housing to define a second passage portion, said passage portions in communication to define a continuous passage, a first annular seal chamber surrounding the passage and positioned adjacent said passage

between said housings, a first seal in said first seal chamber to block flow from said passage, the improvement comprising a second annular seal chamber surrounding said passage, said second seal chamber positioned between said housing and



remote from said passage, a second seal in said second seal chamber to block the flow from said first seal chamber, and a temperature controlling chamber in heat transfer relation with said second annular seal chamber to control the temperature of the second seal therein.

4,139,221

BALL AND SOCKET JOINT

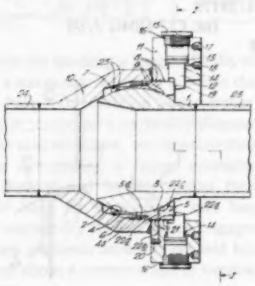
Keith Shotbolt, 62, Howards Wood Dr., Gerrards Cross, Bucks, England (SL9 7HW)

Filed Sep. 22, 1976, Ser. No. 725,632

Claims priority, application United Kingdom, Oct. 6, 1975, 40755/75; Nov. 20, 1975, 47754/75; Feb. 6, 1976, 04670/76; Mar. 19, 1976, 11218/76; Jul. 12, 1976, 28933/76

Int. Cl.[2] F16L *35/00*

U.S. Cl. 285—18 **18 Claims**



1. A ball and socket joint for connecting two pipe ends, the joint comprising:

two coupling members each of which is attached at one end thereof to a respective one of said pipe ends;

one of said two coupling members having, at the other end thereof, a radially enlarged portion defining concentric forward and rearward facing spherical outer surface portions;

a collar which is disposed around said one of said two coupling members and which comprises first and second ring-shaped parts and means for holding the ring-shaped parts against separation, said first ring-shaped part having a spherical internal surface portion in mating engagement with said forward facing spherical outer surface portion of said radially enlarged portion of said one coupling member, and said second ring-shaped part having a spherical internal surface portion in mating engagement with said rearward facing spherical outer surface portion of said radially enlarged portion, the collar being arranged, at least initially, for swivelling movement relative to said radially enlarged portion,

the other of said two coupling members having, at the other end thereof, a socket for receiving the said radially enlarged portion and said collar therein,

securing means comprising at least one abutment member supported by said socket for radial movement with respect to said socket, the abutment member being movable between a radially outward first position, enabling free insertion and removal of said radially enlarged portion and said collar into and from said socket, and a radially inward second position in which the abutment member engages said collar for maintaining it within the socket; and

drive means coupled to the abutment member for driving said abutment member between said inward and outward positions.

4,139,222

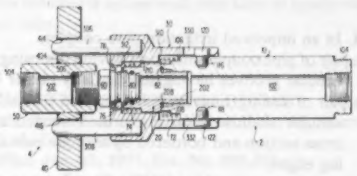
QUICK CONNECT/DISCONNECT COUPLING ASSEMBLY

Sven Loland, Irving City, Calif., assignor to Santa Fe International Corp., Orange, Calif.

Filed Apr. 22, 1977, Ser. No. 789,927

Int. Cl.[2] F16L *37/22*

U.S. Cl. 285—27 **13 Claims**



1. A quick connect/disconnect coupling assembly primarily for use in underwater environments of great depths, comprising:

a first coupling member having releasable locking means;

a sleeve mounted over said first coupling member and movable relative thereto between locking and unlocking positions, wherein, in said locking position, said sleeve locks said releasable locking means, and, in said unlocking position, said sleeve unlocks said releasable locking means;

means normally biasing said sleeve for movement into said locking position;

a second coupling member engagable with said first coupling member, said second coupling member including means for urging said sleeve and said first coupling member into relative movement opposite the normal biasing force of said bias means and into said unlocking position, and means for restoring said sleeve to said locking position upon engagement of said first and second coupling members with each other; and

guide means cooperating with said urging means and said restoring means for guiding said first coupling member and said sleeve:

(a) along a first path of relative movement into a pre-set position, said guide means acting to lock said sleeve against movement into said locking position,

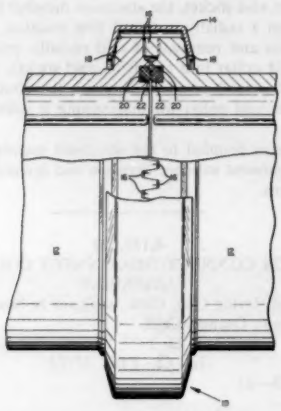
(b) along a second path of relative movement into a spring lock position, in which said sleeve is movable into its locking position by the action of said bias means and into its unlocking position by a force applied to said sleeve opposite the force exerted by said bias means, and

(c) along a third path of relative movement into a positive lock position in which said guide means prevents movement of said sleeve out of its locking position into its unlocking position.

4,139,223
IRRIGATION PIPE COUPLER

Lloyd W. Clements, 49 W. Lincoln Ave. C., Woodland, Calif. 95695

Filed Nov. 14, 1977, Ser. No. 850,924
Int. Cl.[2] F16L *17/00*
U.S. Cl. 285—99 3 Claims

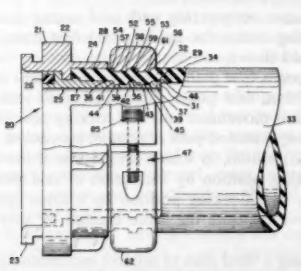


1. In an improved irrigation pipe coupler,
a pair of pipe coupler members having opposing flanges with annular grooves having substantially planar bottoms,
a pair of sealing rings each having in a first side thereof an annular shallow groove therin V-shaped in transverse cross-section and bordered by a single pair of sharp sealing edges,
each groove extending entirely around the sealing ring,
the side of each ring opposite to the first side being substatially semi-circular in transverse cross-section,
and means for pressing the flanges together to press the sealing edges against the planar bottoms of the grooves in the flanges to form vacuums in the grooves in the rings,
the rings normally fitting closely in and projecting beyond the grooves in the flanges and being compressed tightly in the grooves in the flanges by the pressing means.

4,139,224
HOSE CLAMP FOR THIN WALL, HIGH PRESSURE FIRE HOSE

Paul A. Leach, Jaffrey, N.H., assignor to Jaffrey Fire Protection Company, Inc., Jaffrey, N.H.

Filed Jul. 13, 1977, Ser. No. 815,187
Int. Cl.[2] F16L *33/04*
U.S. Cl. 285—253 2 Claims

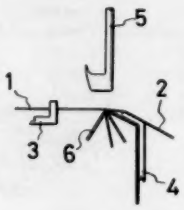


1. In combination with a fire hose coupling of the type having a predetermined outer diameter and an axially extending nipple insertable in one end of a length of thin walled, high pressure fire hose of distortable material:
a plurality of alternate, axially-spaced, annular, relatively-blunt, ribs and grooves, each having tapered side walls and flat cylindrical circumferential walls on the exterior face of said nipple;
and a split clamp having a smooth outer face of diameter less than the diameter of said coupling cooperable with the nipple of said coupling;
said clamp comprising a pair of substantially identical, semi-annular complementary one piece halves;
each said clamp half having alternate, axially-spaced, semi-annular, relatively-blunt, ribs and grooves, each having tapered side walls and flat, cylindrical, circumferential walls on the interior face thereof, which mate with the corresponding ribs and grooves on said nipple with each rib on one opposite, identically configured with, and fitting the groove on the other to distort and firmly clamp said hose end therebetween without fracture thereof;
each said clamp half having a smooth cylindrical exterior face, free of protuberances, with rounded side edges and each having a single central machine screw head recess in each opposite end, spaced from its joint face, and each having a threaded hole, for a machine screw, extending from each said recess to its adjacent joint face; and
a single, central, pair of machine screws each having its head recessed in one of said head recesses and each threaded in the threaded holes at a joint to clamp said halves together in a radial direction around said hose end on said nipple.

4,139,225
METHOD FOR MAKING KNOT FOR FISHING NET

Jiro Maruyama, Hakodate, and Seiji Suzuki, Yokkaichi, both of Japan, assignors to Hakodate Seimo Sengu Co., Ltd., Japan

Filed Dec. 21, 1976, Ser. No. 752,848
Claims priority, application Japan, Dec. 23, 1976, 51/152891; Mar. 19, 1976, 51/29179
Int. Cl.[2] D04G *1/08*
U.S. Cl. 289—1.5 3 Claims



1. A method of making a knot for a fishing net, comprising the steps of:
(A) hanging a warp on an upper hook, by moving the warp over the hook in the direction from the right to the left, when viewing the hook from the side looking at the tip of the hook;
(B) rotating the upper hook about one half turn to the left, counterclockwise when viewing the hook from the side looking at the tip thereof;
(C) hanging a weft on the upper hook by moving the weft over the hook in the direction from the left to the right, when viewing the hook from its present rotated orientation from the side of the hook looking at the tip thereof;
(D) rotating the upper hook through a half turn to the right, clockwise when viewing the hook from the side looking at the tip thereof;
(E) removing the warp from the upper hook, thereby entwining the warp and the weft;
(F) hanging the warp on the upper hook by moving the warp over the upper hook in the direction from the left to the

right, when viewing the hook from the side looking at the tip thereof;

(G) rotating the upper hook through one full turn to the left;

(H) pulling the loop of the warp that is defined at the portion of the warp that is not held by the upper hook away from the upper hook by a lower hook, thereby defining a loop of the warp;

(I) passing the weft through that loop of the warp just defined; and

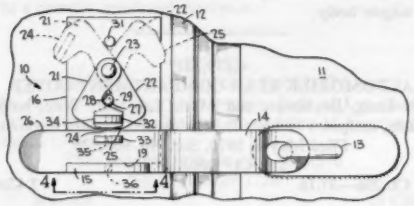
(J) detaching the warp and the weft from the upper hook and tightening, thereby completing the knot.

4,139,226

ANTI-PILFERAGE LATCHING DEVICE

Richard W. Carman, Alexandria, Va., and Glen D. Larsen, Upper Marlboro, Md., assignors to Southern Railway Company, Washington, D.C.

Filed Oct. 7, 1977, Ser. No. 840,220
Int. Cl.[2] E05C *19/08*
U.S. Cl. 292—285 **5 Claims**



1. In a device for latching a longitudinally sliding member in place against a stationary structure wherein the device includes an elongated hasp mountable on said member and engageable with a keeper mounted on a vertically disposed bracket which is securable to said structure, the improvement comprising:

said keeper comprising a flange extending laterally outwardly thereof and having means thereon engageable with said hasp for preventing said hasp from moving laterally outwardly thereof when engaged;

a pair of cam elements mounted on said bracket for pivotal movement about a common axis in vertical alignment with said flange;

said cam elements being disposed above an end edge of said hasp and having flat lower end surfaces directly overlying said end edge for latching said hasp against vertical upward movement;

said cam elements being substantially L-shaped and wholly lying in planes parallel to said hasp, legs of said elements facing one another and defining an opening therebetween when said end surfaces directly overlie said end edge; and

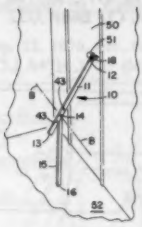
one stop pin on said bracket engageable with inner edges of said cam elements and extending through said opening therebetween so as to permit one of said cam elements to pivot about said axis in only one direction when said end surface thereof overlies said end edge, and permitting the other of said cam elements to pivot about said axis in only another direction opposite said one direction when said end surface thereof overlies said end edge, whereby said hasp remains latched against said vertical upward movement even when said cams are subjected to forces having a tendency to cause said cam elements to pivot in said one direction and in said opposite direction.

4,139,227

SECURITY DOOR GUARD

Robert E. Spurr, 25001 Hendon, Laguna Hills, Calif. 92653

Filed Apr. 18, 1977, Ser. No. 788,413
Int. Cl.[2] E05C *17/54*
U.S. Cl. 292—339 **2 Claims**



1. A door guard having an extended length, comprising:

a top member having an upper end and a lower end wherein the top member is channel aluminum;

pivot means having a pivot axis coupled to the top member; and

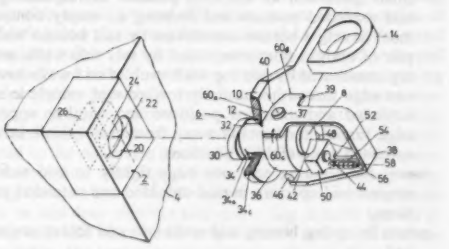
a bottom member having a lower end and an upper end coupled to the top member by the pivot means wherein the bottom member is square wall steel tube or square wall aluminum tube.

4,139,228

QUARTER-TURN LOCKING DEVICE

Thomas Varadi, Beersheba, Israel, assignor to Israel Aircraft Industries Ltd., Lod, Israel

Filed Jun. 13, 1977, Ser. No. 806,266
Int. Cl.[2] B66C *1/66*
U.S. Cl. 294—83 R **10 Claims**



1. A locking device including a lock-pin assembly and a slotted member into which the lock-pin assembly may be inserted and then locked; said slotted member being formed with a slot having a longer length than width, and a cavity underlying and communicating with said slot and having a length and width both at least equal to the length of said slot; said lock-pin assembly comprising a pin having inner and outer ends; an axial-stop element fixed to the inner end of the pin and having a length and width less than those of the slot to permit inserting same through the slot, the length of the axial-stop element being greater than the width of the slot but less than the width of the cavity; a rotary-stop element fixed to the inner end of the pin between the axial-stop element and the outer end of the pin, said rotary-stop element having a width no greater than, and a length substantially equal to, the width of the slot; and a handle at the outer end of the pin, said handle enabling the user to insert both said stop elements of the pin assembly through the slot and into the cavity, to turn the assembly one-quarter turn, and then to pull the assembly partially out of the slot until the

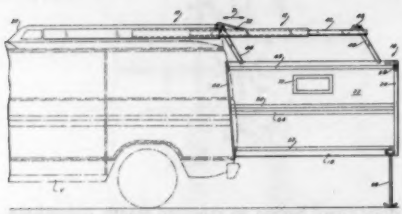
axial-stop element engages the wall of the cavity and the rotary-stop element seats within and engages the walls of the slot.

4,139,229

ENCLOSURE EXTENSION FOR VEHICLE

Herbert Cooper, 1 Toms Pt. La., Port Washington, N.Y. 11050

Filed Apr. 12, 1977, Ser. No. 786,769
Int. Cl.[2] B60P *3/32*
U.S. Cl. 296—23 C **16 Claims**



1. An accessory for use with a vehicle having a closed interior accessible from the exterior through an aperture, said accessory comprising:

a support fixed on said vehicle in the vicinity of and generally above said aperture and generally within the vertical projection of said vehicle;

a frame displaceable on on said support between a retracted position generally within said support and an extended position projecting from said support and from said vehicle above said aperture;

a top wall, a bottom wall, and a pair of side walls all carried on said frame and displaceable therewith;

means including articulations between said walls and said frame for displacing same from a folded position corresponding to said retracted position with all of said walls fitting compactly together and occupying a relatively small space and an unfolded position corresponding to said extended position and forming an empty compartment having a bottom constituted by said bottom wall, a pair of upright sides constituted by said side walls, and a top constituted by said top wall, each of said walls having one edge turned horizontally toward said vehicle in said extended and unfolded positions and another opposite edge turned horizontally away from said vehicle in said extended and unfolded positions;

means for securing said one edge tightly to said vehicle around said aperture in said unfolded and extended positions;

means for spring biasing said walls into said folded position; and

an end wall carried on said frame and displaceable between an up position corresponding to and fitting closely with the other walls in said folded position and a down position extending uprightly and snugly engaging said other edges of said other walls in said unfolded position thereof.

4,139,230

WAGON BODY FOR TRANSPORTING SEED COTTON AND THE LIKE

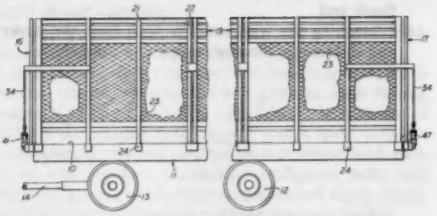
Thomas A. Barrentine, R.F.D. #1, Box 6; Benjamin F. Barrentine, R.F.D. #2, Box 114, and Reed B. Alford, 610 Cherokee Dr., all of Greenwood, Miss. 38930

Filed Jul. 7, 1977, Ser. No. 813,438
Int. Cl.[2] B62D *33/08*
U.S. Cl. 296—26 **4 Claims**

1. In a wagon body of the kind having sides mounted alongside a deck and provided with means permitting the upper edges of the sides to move outwardly, thereby to increase the volumetric capacity of the body for loading, the improvement comprising:

(a) an elongated, hollow, tube-like torsion member extending substantially the length of the deck generally co-incident with the longitudinal center line of the body and supported thereon for oscillation,

(b) a plurality of links each having one end operatively connected to the body sides and the other end operatively connected to the torsion member in offset relation to the longitudinal axis of the torsion member,



(c) fluid pressure cylinders operatively connected to each end of the torsion member to oscillate the torsion member, thereby to move the upper edges of said body sides from outward positons to inward positions, and

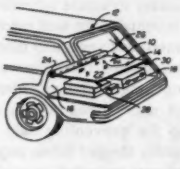
(d) a conduit for fluid under pressure for one of the fluid pressure cylinders extending through the torsion member, whereby fluid under pressure may be supplied substantially simultaneously to both cylinders from one end of the wagon body.

4,139,231

AUTOMOBILE REAR COMPARTMENT COVER

David Lang, Rochester, and Mark Lobanoff, Troy, both of Mich., assignors to Irvin Industries Inc., Stamford, Conn.

Filed May 8, 1978, Ser. No. 903,929
Int. Cl.[2] B60R *5/04*
U.S. Cl. 296—37.16 **2 Claims**



1. A motor vehicle compartment cover device for use in covering and thereby concealing the contents of a compartment in a motor vehicle comprising in combination:

a. an elongated hollow cylindrical roller having first and second open ends, an elongated central axis, and an anchor groove formed in said roller substantially parallel to said central axis; said groove having a necked slotted opening formed the length of said roller and a walled portion forming an enlarged cross-sectioned enclosure and extending substantially the length of said roller but short of said second end;

b. A substantially rectangular flexible sheet member having a width substantially co-extensive with said walled portion and a length at least of sufficient extent to cover said compartment, said sheet member being formed, near one edge portion, of material thin enough to fit through said necked opening and having said edge portion formed of predetermined thickness to fit into said walled portion and be unable to pass through said necked opening, whereby said sheet member may be anchored in said groove; said

sheet member also including a means near a second edge portion operable to attach said sheet to said vehicle; and

c. pivot means including first and second pivot devices disposed within said first and second ends, respectively, of said roller and being operable to rotatably connect said roller to the vehicle to allow the roller to rotate substantially about said central axis.

said first pivot device comprising a first casing and a first shaft, said first shaft being supported in said first casing disposed co-extensively with said axis;

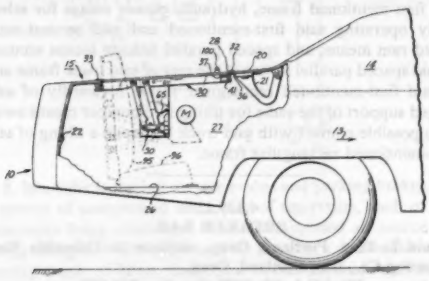
said second pivot device comprising a second casing having a perpheral opening, a second shaft, and a spring, and wherein said casing rotatably supports said second shaft co-extensively with said axis, said spring being mounted within said second casing and having inner and outer ends and being loosely coiled about said second shaft with its inner end anchored to said second shaft; said peripheral opening being aligned with said necked slotted opening; the outer end of said coil spring being bent in a hooked-like configuration and extending through said peripheral opening to engage an edge of said necked slotted opening whereby said coil spring is connected between said second shaft and said roller;

said second shaft being operable to be non-rotatably secured to said vehicle whereby, when said cover device is mounted on said vehicle, rotation of said roller about its said axis with respect to said vehicle will tighten said coil spring and cause said spring to generate rotational forces in a counter rotational direction.

4,139,232
DROP-IN RUMBLESEAT SYSTEM

Donald B. Cerf, and Perry J. Dreibus, both of Los Angeles, Calif., assignors to Rumble Seat Corporation of America, Los Angeles, Calif.

Filed Jul. 27, 1977, Ser. No. 819,270
Int. Cl.[2] B60N *1/10*
U.S. Cl. 296—66 **23 Claims**

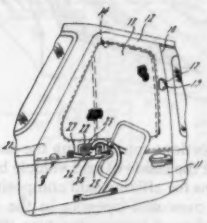


1. A drop-in rumble seat system to fit in an aperture in the trunk lid of a vehicle, said aperture having a peripheral margin, said system comprising: a peripheral frame making a fluid seal with the trunk lid and being supported by said lid at the peripheral margin; bearing means mounted to and depending beneath said frame; hinge means rotatably mounted to said bearing means; a support member mounted to said hinge means, said support member being adapted to assume a closed position where it closes the aperture, and a backrest position where it leaves the aperture open and is tilted relative to the frame to form a backrest; said hinge means comprising a parallelogram structure which includes a drive link, two substantially parallel links, each pivotally mounted to the drive link at points spaced apart from one another, and a fourth link generally parallel to the drive link, and forming a rigid structure with the support member, the parallel links being pivotally mounted to the fourth link at points spaced from one another, the drive link being rotatably mounted to the bearing means, whereby the support member can be tiltably moved while in the aperture to clear the peripheral frame, and then rotated to the backrest position and the reverse.

4,139,233
SCREEN FOR THE WINDOW AT THE TOP OF A VEHICLE DOOR

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Filed Sep. 22, 1976, Ser. No. 725,499
Int. Cl.[2] A47H *3/00*; B60J *1/08*
U.S. Cl. 296—84 M **1 Claim**



1. A cover for the top of a vehicle door at the window opening comprising, a fabric material having the outer edge substantially the same shape as that of the outer edge of the top portion of the door at the window opening, said fabric having an opening substantially equal in size to that of the door window opening, a screen secured to the edge of the fabric at the window opening therein, a strip of material secured to the outer edge of said fabric at the top and sides thereof to form an inwardly facing U-shaped edge which receives the top and side edges of the door when moved downwardly thereover, an elastomeric strip having opposite ends secured to an inner side of said cover and adapted to engage a projection on the interior of said door so as to retain said U-shaped edge in overlying relationship to said top and side edges, means in the portion of the fabric below the screen for securing the fabric to the metal of the door below the window opening, an inverted U-shaped cut-out area provided in said fabric below the window opening for clearing an outwardly extending supporting element supporting a rear view mirror upon and spaced outwardly from the exterior side of the door, and a resilient strip of material secured to the outer side of said fabric and extending between said mirror and said supporting element, said resilient strip closing the open end of the U-shaped cut-out area to retain said fabric on said door adjacent said supporting element and cooperating with said elastomeric strip to retain said portion of the fabric below the screen in engagement with said door.

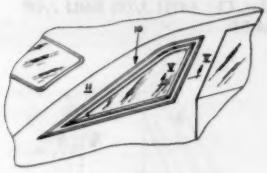
4,139,234
WINDOW ASSEMBLY

Cleon Morgan, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Continuation-in-part of Ser. No. 724,618, Sep. 20, 1976, Pat. No. 4,072,340. This application Dec. 27, 1977, Ser. No. 864,487
Int. Cl.[2] B60J *1/02*
U.S. Cl. 296—84 R **34 Claims**

1. A vehicular window assembly formed as a complete unit prior to installation and adapted for installation from the exterior of a vehicle body to provide an assembly for closing an opening in a vehicle body, said window assembly comprising a casing constructed of a molded plastic material approximating the shape and size of the opening in a vehicle; a transparent window having a peripheral edge with said casing molded around said peripheral edge; attachment means for attaching said casing and window to said vehicle body, said casing being molded around at least a first portion of said attachment means so as to embed said first portion within the casing; said first portion of said attachment means including a continuous, rigid

frame extending along the entire length of said casing and concealed from view from outside the vehicle body, said frame having at least one flange extending therealong which is embedded within said casing, said frame providing strength and support for said casing; said casing having an inner surface arranged to face in a direction toward the inside of the vehicle body and an outer surface arranged to face in a direction toward the outside of said vehicle body; said attachment means



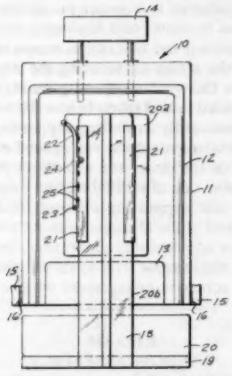
having second portions spaced along the casing, extending in a direction toward the inside of said vehicle body, and constituting affixing means for affixing said composite casing and transparent window over said opening in the vehicle body; said casing and attachment means structure providing a finished trim around said window and the periphery of the opening in the vehicle body in which said frame including said second, affixing means, portions are concealed from view outside of the vehicle body.

4,139,235

BACK SUPPORT TRUCK SEAT BACK

Richard A. Elbert, 101 S. Riverside Dr., Ames, Iowa 50010

Filed Mar. 10, 1978, Ser. No. 885,443
Int. Cl.[2] A47C *3/00*
U.S. Cl. 297—284 **6 Claims**



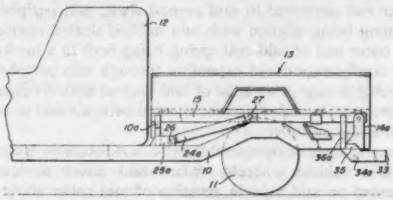
1. A back support truck seat comprising, in combination,
a main body,
a pair of hinged side support arms secured to said main body for providing pelvic support for a driver,
an elongated brace plate secured at one end to the seat bottom providing support means for said main body,
a back brace secured to said main body and having a pair of parallel, spaced apart channel members for slidably and adjustably receiving the opposite end of said elongated brace plate for altering the height of said main body with respect to said seat bottom,
one of said pair of channel members having a slot opening on one longitudinal side edge, for the receiving of an offset pin of a locking lever, which is fixedly secured to said back brace, and the adjacent longitudinal side edge of said elongated brace plate having a plurality of equally spaced apart openings for registration with said slot opening, so that said offset pin when received in said slot opening and in any one of said openings in said brace plate serves as locking means for a height adjustment of said main body, and
an inflatable bladder secured in said main body for supporting the lower back of a driver.

4,139,236

PICK-UP TRUCK

C. Lee Hill, Star Route, Port Loudon, Pa. 17224, and John E. Carmack, Lemasters, Pa. 17231

Filed Apr. 15, 1977, Ser. No. 788,086
Int. Cl.[2] B60P *1/16*
U.S. Cl. 298—14 **3 Claims**



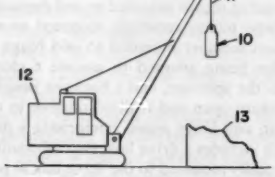
1. In combination with the frame of a pick-up truck, a rectangular frame hingedly supported at the rear of the truck frame, a further rectangular frame in slideable engagement with said first-mentioned rectangular frame, a truck bed secured to said further rectangular frame, bumper means pivotally supported by spaced parallel means connecting with the rear of said pick-up frame, spaced parrallel hydraulic ram means connecting with said truck frame and said first-mentioned rectangular frame for tilting said first-mentioned rectangular frame, hydraulic ram means connecting with said first-mentioned rectangular frame and further frame axially thereof for sliding said further frame and truck bed secured thereto with respect to said first-mentioned frame, hydraulic power means for selectively operating said first-mentioned and said second-mentioned ram means, and spaced parallel linkage means secured to said spaced parallel means at the rear of said truck frame and to said first-mentioned rectangular frame forwardly of said hinged support of the same for tilting said bumper means away from possible contact with said truck bed upon a tilting of said first-mentioned rectangular frame.

4,139,237

BREAKER BAR

Harold L. Hay, Portland, Oreg., assignor to Columbia Steel Casting Co., Inc., Portland, Oreg.

Filed Feb. 18, 1977, Ser. No. 769,957
Int. Cl.[2] E01C *23/12*; E21C *47/10*
U.S. Cl. 299—94 **3 Claims**



1. A breaker bar for use in quarrying and other operations for dropping onto large frangible masses to be broken into smaller pieces, comprising a heavy body of cast austenitic magnanese steel in a vertically elongated shape of generally

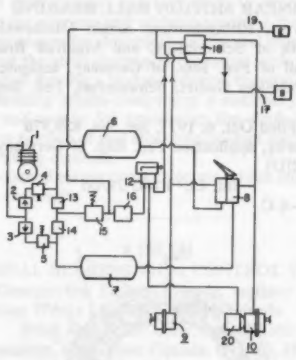
planarly sided walls extending outwardly from a central intersection, said walls terminating in a substantially blunt bottom end, each wall being of a substantially uniform thickness of from about five to about eight inches, whereby the walls are sufficiently thick to provide an adequately concentrated mass in the breaker bar, without exceeding the maximum wall thickness of said manganese steel which can be quenched upon heat treatment to provide a desired internal structure resulting in adequate strength and wear resistance for the breaker bar.

4,139,238

VEHICLE BRAKING SYSTEMS

David A. Hoffman, Elyria, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 1, 1977, Ser. No. 820,522
Int. Cl.[2] B60T *13/14*
U.S. Cl. 303—7 5 Claims



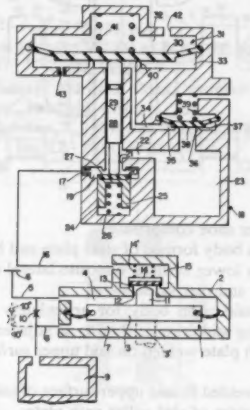
1. In a vehicle having service brakes and parking brakes, and a source of compressed air, a pair of reservoirs, each of said reservoirs being connected to said compressed air source and being charged with compressed air thereby, a dual brake valve having a pair of inlets, and a pair of outlets, said inlets being communicated, respectively, with said reservoirs, one of said outlets being connected to at least one of said service brakes and the other outlet being connected to the rest of the service brakes, said dual brake valve being actuatable from a first condition blocking communication between the inlets and outlets to a second condition communicating each of said inlets with a corresponding one of said outlets, a pair of check valves, each of said check valves having an inlet and an outlet and permitting substantially uninhibited communication from the inlet to the outlet but blocking communication in the reverse direction, the inlet of one of said check valves being communicated to one of said reservoirs and the inlet of the other check valves being communicated to the other reservoir, the outlets of said check valves being communicated with one another and to a parking brake line communicating with said parking brakes, and control valve means in said parking brake line for controlling communication therethrough between the outlets of said check valves and said parking brakes.

4,139,239

BRAKE ACCELERATOR FOR A FLUID-PRESSURE BRAKE SYSTEM HAVING A BRAKE CONTROL VALVE

Georg Stäuble, and Josef Hintner, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 844,055
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647283; Aug. 23, 1977, 2737875
Int. Cl.[2] B60T *17/04*
U.S. Cl. 303—82 6 Claims



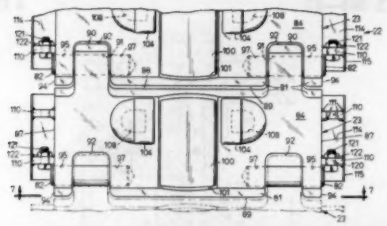
1. A brake accelerator for a fluid-pressure brake system having a brake control valve comprising a control chamber having a first throttle connection to a brake line, an emergency brake piston in a control valve and having one side subjected to pressure in a brake line and a second side subjected to pressure in said control chamber, first passage means between the brake line and a second control chamber, a normally closed first valve in said first passage means and operable to an opened position by said emergency piston in response to a decrease in pressure in the brake line, a normally open second valve in said first passage means, second passage means between said second control chamber and the atmosphere, a control piston in said second passage means operable to close said second valve and defining a third valve normally closing said second passage means, pressure fluid entering said second control chamber from the brake line upon opening of said first valve when a decrease in pressure occurs in said brake line to increase pressure in said second control chamber such that the increased pressure acts upon said control piston to open said third valve whereby pressure fluid is drawn off to the atmosphere from said second control chamber and to close said second valve, a first spring acting upon said control piston to move said control piston to close said third valve and to open said second valve when the pressure in said second control chamber drops below a predetermined value so that a limited quantity of pressure fluid is drawn from the brake line by the accelerator, said control piston being held in a first position by said spring wherein said second valve is open and said third valve is closed and is moved into a second position wherein said first valve is closed and said third valve is open by an increase of pressure in said second control chamber, a fourth valve in said second passage between said control piston and said second control chamber, and a second spring closing said fourth valve, said fourth valve opened by a predetermined increase in pressure in said second control chamber, said fourth valve being moved by said second spring into its closed position before said control piston os moved by said first spring from its second position to its first position.

4,139,240

CRAWLER SHOE AND METHOD FOR MAKING SAME

Richard L. Profio, Wauwatosa, and Neil E. Borgman, Muskego, both of Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.

Filed Aug. 15, 1977, Ser. No. 824,716
Int. Cl.[2] B62D *55/20*
U.S. Cl. 305—39 10 Claims



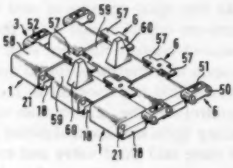
1. A crawler shoe comprising:
a solid main body formed of steel plate and having an upper surface, a lower surface, opposite lateral sides and opposite front and rear sides;
means on said main body for articulately and releasably connecting said crawler shoe to an adjacent crawler shoe;
a roller path plate welded on said upper surface of said main body;
drive lugs welded to said upper surface of said main body on opposite sides of said roller path plate;
a belly pan formed of steel plate welded to said lower surface of said main body;
and end gussets welded to and projecting from said opposite lateral sides of said main body, said belly pan also being welded to said gussets.

4,139,241

ENDLESS TRACK

Gerd Hühne, Mörsch, and Hans-Peter Stolz, Ettlingen, both of Fed. Rep. of Germany, assignors to Ing. Ludwig Pietzsch, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 6, 1977, Ser. No. 757,329
Int. Cl.[2] B62D *55/20, 55/28*
U.S. Cl. 305—51 6 Claims



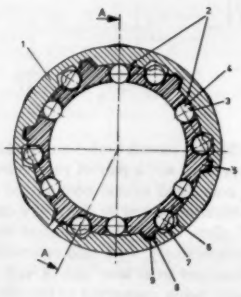
1. An endless track, comprising
(a) a plurality of chain links each including a plurality of tubular bodies arranged transversely of the direction of travel of the track, said tubular bodies having at their forward and rear ends aligned openings extending transversely of the link;
(b) rod members extending through said aligned openings, respectively;
(c) means including a plurality of connector links connecting the forward end of one chain link with the trailing end of a preceding chain link, at least some of said connector links being intermediate connector links arranged between said tubular bodies, respectively, said connector links being mounted at their forward and rear ends on the rods associated with the rear and forward ends, respectively, of said tubular bodies;
(d) a plurality of running pads arranged beneath said tubular bodies, respectively, when the chain link is positioned for engagement with a horizontal supporting surface; and
(e) vertically operable snap-fit locking means connecting each running pad with the associated tubular body, said snap-fit locking means including resilient retainer elements extending generally horizontally from opposed surfaces of each of said running pads, said retainer elements being snap-fit into locking engagement with a pair of claw-like projections defined, respectively, on the opposing wall portions of a corresponding recess contained in said tubular body member, one of said claw-like projections containing a slot for receiving one jaw of an assembly tool for engagement with the corresponding retainer element during the snap-fit connection between said running pad and said tubular body.

4,139,242

LINEAR MOTION BALL BEARING

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 6, 1977, Ser. No. 839,978
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 7633262[U]
Int. Cl.[2] F16C *29/06*
U.S. Cl. 308—6 C 9 Claims

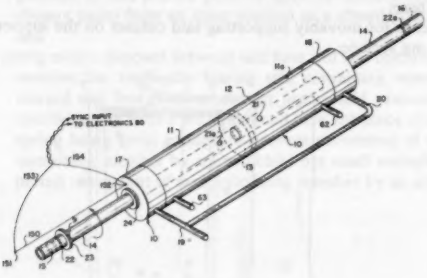


1. In a linear motion ball bearing assembly including a cylindrical sleeve with a bore having terminal ends and an adjacent ball-retaining cage for use with a shaft within said cage, the bore and cage having adjacent surfaces defining a plurality of continuous ball circulation paths, each comprising a longitudinal load surface along said bore surface and adjacent longitudinal return groove in said bore surface, said bearing further comprising means for permitting restricted rotation of said cage and balls relative to said bore surface in circumferential direction comprising means projecting from one of said adjacent cage and bore surfaces into a recess in the other of said adjacent surfaces, with circumferential play provided between said projecting means and recess means for permitting said cage and balls to move slightly laterally relative to said sleeve.

4,139,243
PROTECTIVE SYSTEM FOR A PNEUMATICALLY ACTUATED ROTATING BODY

Robert M. Landsman, Annandale, Va., assignor to LogEtronics, Inc., Springfield, Va.

Division of Ser. No. 645,583, Dec. 31, 1975. This application Dec. 23, 1976, Ser. No. 753,673
Int. Cl.[2] F16C *32/06*
U.S. Cl. 308—9 7 Claims

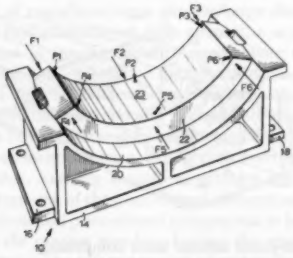


1. In a machine having a braking means:
a. a shaft and means for rotating the same,
b. means for pneumatically supporting said shaft and including an air bearing, said air bearing having an air supporting element and means for directing compressed air between said element and said shaft to support the shaft above the element and without touching the element,
c. braking means for slowing the rotational speed of the shaft without the shaft coming into contact with said element,
d. said shaft having a braking portion thereon, and
e. said braking means comprising a stationary braking element and means for translating the shaft to bring said braking portion of said shaft into contact with said stationary braking element,
said last-named means comprising air driven means for translating the shaft.

4,139,244
JOURNAL BEARING FILM CONTROL SYSTEM

Rhual L. Guerguerian, Lasalle, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

Filed Jun. 2, 1977, Ser. No. 802,352
Claims priority, application Canada, Oct. 13, 1976, 263263
Int. Cl.[2] F16C *13/04, 35/02*
U.S. Cl. 308—9 11 Claims

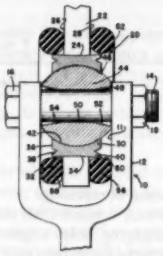


1. A bearing, for use with a large diameter nominally cylindrical deformable support means secured to a rotatable load bearing drum, in partial supporting relation therewith, comprising bearing liner means subtending substantially an arc of a circle, bearing support means in deformable supporting relation beneath the liner means to provide support to an undersurface of the liner means in load transfer relation therewith, a bearing upper surface of said liner means having a substantially part-cylindrical surface to provide support to said cylindrical support means, lubrication supply means to provide a film of fluid lubricant to said liner upper surface, recesses in said liner means in peripherally and axially spaced relation each terminating closely adjacent said cylindrical surface, and sensing probe means located within said recesses having head portions thereof in predetermined oriented and mutually spaced relation from said cylindrical surface to provide in use a read-out responsive to variations in spacing relation between said probes and said cylindrical support means.

4,139,245
VIBRATION DAMPING IN MACHINE ELEMENT BEARINGS

Albert R. McCloskey, Fairfield, Conn., assignor to The Heim Universal Corp., Fairfield, Conn.

Filed Jun. 3, 1977, Ser. No. 803,278
Int. Cl.[2] F16C *9/06, 27/06*
U.S. Cl. 308—26 14 Claims

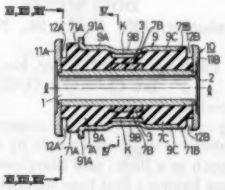


1. Bearing apparatus having an inner member with an outer bearing surface, an outer bearing member having an inner bearing surface juxtaposed to the outer bearing surface of the inner member, and an elastomeric member secured with respect to the outer member and wherein the outer member is annular and radially surrounds the inner member, and wherein the elastomeric member is positioned around the outer member.

4,139,246
VIBRATION CONTROL BUSH ASSEMBLY AND METHOD OF MAKING THE SAME

Shigeta Mikoshiba, and Tomomichi Oishi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 15, 1977, Ser. No. 787,999
Claims priority, application Japan, Apr. 17, 1976, 51-48241[U]
Int. Cl.[2] F16C *27/06*
U.S. Cl. 308—26 12 Claims



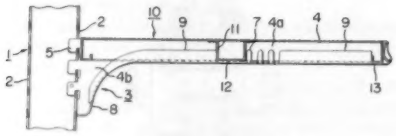
1. A cylindrical bush assembly for vibration control comprising an inner cylinder; an annular stop member encircling the middle portion of said inner cylinder; an outer cylinder coaxially encircling said inner cylinder and radially spaced apart therefrom to define a cylindrical clearance space encir-

cling said inner cylinder, said inner cylinder being greater in length than said outer cylinder, said outer cylinder having a small diametrical portion encircling said stop member and a flange at one end thereof; a generally cylindrical impact absorbing member of vulcanized rubber having a smaller coefficient of elasticitiy than said stop member and secured in said cylindrical clearance space, said impact absorbing member having a thin portion encircling said stop member defining a clearance within said small diametrical portion and a wide portion adjacent to said flange; and a pair of washers secured to the ends of said inner cylinder.

4,139,247
GOODS SHOWCASE

Masashi Karashima, 2-40-7, Sangenjaya, Setagaya-Ku, Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,513
Claims priority, application Japan, Oct. 18, 1977, 52-124115
Int. Cl.[2] A47F *3/06*
U.S. Cl. 312—130 **4 Claims**



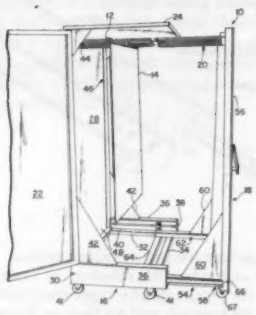
1. A goods showcase comprising:
a plurality of adjacent, vertical shelf struts, each strut having a plurality of engaging holes aligned in columular form;
shelf support members fitted into said engaging holes, each support member being comprised of:
an L-shaped side plate having a vertical portion and a horizontal portion extending away from said vertical portion,
engaging members on the side of said vertical portion opposite said horizontal portion, said engaging members fitting into said engaging holes in said shelf struts,
a horizontal flange extending at right angles from the lower edge of said side plate, and
vertical engaging claws along the length of and extending upward from said horizontal flange; and
at least one shelf plate positioned across said shelf support members on adjacent shelf struts, said shelf plate having a reinforcing plate on the underside thereof and said reinforcing plate being selectively engagable with said vertical engaging claws on said horizontal flange, whereby the horizontal distance from said shelf struts of said shelf plate on said shelf support member is varied by selecting the appropriate vertical engaging claws to be engaged by said reinforcing plate.

4,139,248
FILING SYSTEM FOR VERTICALLY SUSPENDING DOCUMENTS

Walter Hornbacher, 2001 Centre St., N., Calgary, Alberta, Canada

Filed Apr. 25, 1977, Ser. No. 790,821
Int. Cl.[2] A47B *63/00*
U.S. Cl. 312—184 **8 Claims**

1. A filing cabinet for vertically suspending sheets wherein said filing cabinet is supported solely by a horizontal supporting surface such as a floor, said filing cabinet comprising:
a first frame having a first base supported by the supporting surface and a first vertical side mounted at the bottom end thereof to one end of said first base;
a second frame having a second base supported by the supporting surface and a second vertical side mounted at the bottom end thereof to one end of said second base;
means for telescopically engaging and supporting said second base by said first base such that said other end of said second base is cooperatively engaged with said other end of said first base and such that said first and second frames can be relatively separated to open said filing cabinet and can be relatively combined to close said filing cabinet, said engaging and supporting means comprising laterally spaced apart track members mounted on said first base and laterally spaced apart roller means mounted on said second base for correspondingly engaging said track members for movably supporting said other end of said second base;
means for movably supporting said cabinet on the supporting surface;

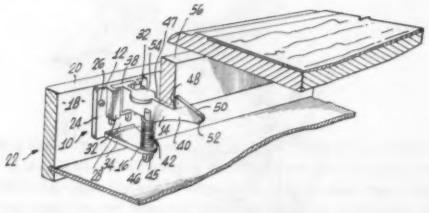


a single coplanar row of cantilever means for supporting the sheets, and comprising at least two, laterally spaced apart groups of substantially straight horizontally and longitudinally extending cantilevered bars, each said group of bars comprising at least first and second laterally spaced apart bars, said first ones of each group of bars being rigidly mounted to the top end portion of said first side and said second ones of each group of bars being rigidly mounted to the top end portion of said second side, said bars being for conjointly suspending the sheets at one end of the sheets; and
sheet suspension means comprising a plurality of orifices for cooperating with said bars to suspend sheets therefrom.

4,139,249
CHILD-PROOF LATCH

Ernest C. Hillman, 1277 S. Adams St., Glendale, Calif. 91205

Filed Nov. 7, 1977, Ser. No. 849,017
Int. Cl.[2] E05C *19/06*
U.S. Cl. 312—333 **7 Claims**



1. A child-proof cabinet latch comprising:
a base adapted to be mounted on the inwardly facing surface of an openable cabinet closure panel where it is inaccessible when said closure member is in a fully closed position, said base defining a guide channel;
a restraining member with an abutment surface thereon having a first position in which said abutment surface is disengaged when said closure member is fully closed but is engageable with a portion of said cabinet to limit opening movement of said closure panel and a second position in

which said abutment surface is not engageable with said portion and permits unlimited opening movement of said closure panel, said restraining member having a slide portion reciprocably confined within said guide channel as said restraining member moves between said first and second positions and an arm that extends away from said slide portion, said arm having a cam surface means thereon for moving said restraining member from said first position to said second position upon movement of said closure panel from an open position to a closed position; and

spring means disposed between said base and said restraining member for resiliently biasing said restraining member toward said first position and for urging said restraining member away from a portion of said base, the force of said spring being great enough to prevent movement of said restraining member by a small child but small enough to permit movement of said restraining member by an adult.

4,139,250

GAS DISCHARGE DISPLAY PANEL AND METHOD OF MANUFACTURING THE SAME

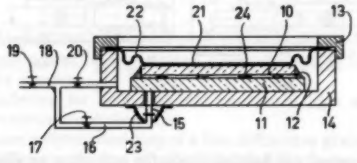
Jacobus H. Jacobs; Johannes Van Esdonk, and Johannes P. T. Franssen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 732,358, Oct. 14, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,343

Claims priority, application Netherlands, Oct. 27, 1975, 7512517

Int. Cl.[2] H01J *9/18, 9/38*

U.S. Cl. 316—19 **4 Claims**



1. Method of manufacturing a gas discharge display panel comprising a first plate-shaped glass element, a second plate-shaped element, a spacing member intermediate said plate-shaped elements and a tubulation for exhausting and back-filling said panel, the method comprising the steps of assembling said plate-shaped elements and said intermediate spacing member, placing a heat fusible sealing material in contact with said plate-shaped elements along a closed path surrounding said spacing member, exerting a uniform pressure on the entire surface of at least one of the plate-shaped elements sufficient to elastically deform said plate-shaped element and to bring it into contact with the spacing member, heating the assembly to a temperature above the softening point of said sealing material but below the softening point of said plate-shaped glass element for a sufficient time to thereby form a vacuum-tight seal between the plate-shaped elements and convert the elastic deformation of said plate-shaped glass element obtained by the uniform pressure exerted on the surface thereof into a permanent deformation, evacuating and backfilling the space between said plate-shaped elements with an ionizable gas through said tubulation and sealing said tubulation.

4,139,251

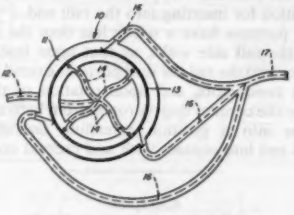
WIDE BAND SLIP RING MODULE

Robert H. Miller; Eugene A. Manus; Herbert C. Walker, all of Blacksburg, and Sherwin L. Brady, Floyd, all of Va., assignors to Litton Systems, Inc., Blacksburg, Va.

Filed Nov. 2, 1977, Ser. No. 847,739

Int. Cl.[2] H01R *39/00*

U.S. Cl. 339—5 M **15 Claims**



1. A slip ring assembly for transmitting signals in a wide band DC to UHF frequency range from a source to a load, the assembly comprising:

a slip ring of conductive material,

a first number of slip ring feeds connected to said slip ring, said feeds being spaced around the circumference of said ring,

a second number of brush leads coupled to said slip ring, said second number being different than said first number and said leads being spaced around the circumference of said ring to form a vernier connection with said feeds, and

an annular housing surrounding said assembly and forming a module.

4,139,252

CURRENT COLLECTOR WITH A PROTECTIVE SCREEN

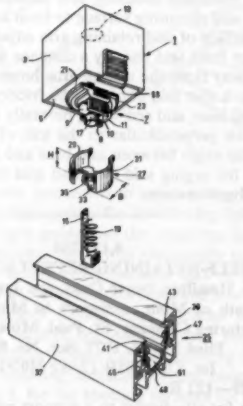
Rolf D. Gorny, Hilden, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,201

Claims priority, application Netherlands, Dec. 3, 1976, 7613476

Int. Cl.[2] H01R *7/32, 13/44*

U.S. Cl. 339—22 B **2 Claims**



1. A current collector, for electrical connection to a current rail having two parallel side walls with current conductors in said side walls, comprising a housing having a base plate, and a coupling member projecting axially in a given direction from the base plate and mechanically connected to the housing, said member having laterally directed electrical contact fingers

arranged about the axis to make electrical contact with the current conductors of a current rail into which the collector has been inserted,

wherein the collector additionally comprises a screening element mounted to the coupling member for rotation about said axis, said screening element having a bottom and two diametrically opposed wall portions extending from the bottom in a direction opposite said given direction, spaced apart and arranged such that said fingers extend between the wall portions while said collector is in a condition for inserting into the rail; and

said wall portions have a width less than the distance between the rail side walls, so that upon insertion of the collector into the rail the wall portions extend between the current conductors, and upon rotation of the coupling member the contact fingers rotate from between said wall portions into a position extending laterally outward toward and into contact with said current conductors.

4,139,253

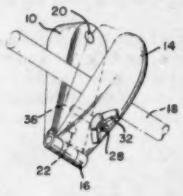
PLUG RETAINING DEVICE

Gerald E. Hudson, 229-15th St. West, Billings, Mont. 59102

Division of Ser. No. 619,026, Oct. 2, 1975, abandoned. This application Dec. 12, 1977, Ser. No. 859,948

Int. Cl.[2] H01R *13/56*

U.S. Cl. 339—75 P **3 Claims**



1. A device for retaining a plug within a wall receptacle responsive to forces exerted on an electrical cord connected to said plug, said device comprising: an elongated base having a substantially flat mounting surface; fastening means for securing said base to a stationary member adjacent said wall receptacle, with said mounting surface contacting said stationary member; a frictional retaining arm extending from said base away from said mounting surface to form an acute angle therewith, the surface of said retaining arm adjacent said base being spaced apart from said base by a distance which progressively increases away from the area of attachment between said arm and base such that said cord may be frictionally held between said arm and base; said arm being pivotally secured to said base along an axis perpendicular to the axis of said base and arm such that the angle between said base and arm may be varied; and means for urging said base and arm together to decrease the angle therebetween.

4,139,254

SELF-RETAINING RECEPTACLE BOX

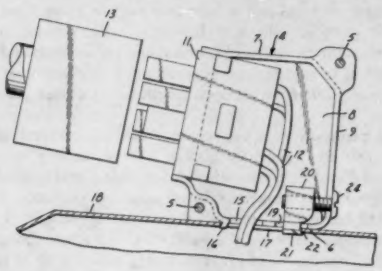
Richard M. Hamilton, North Oaks, and James A. Sievert, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 7, 1977, Ser. No. 849,085

Int. Cl.[2] H01R *13/60*; H02G *3/08*

U.S. Cl. 339—122 R **1 Claim**

1. A box for attachment to a support panel over a standard knock-out opening, said box comprising a base plate a top plate and side walls defining a generally rectangular housing, one of said side walls having means supporting an electrical receptacle, said base plate having a circular opening, a projection extending from said base plate adjacent one edge of said opening, and having a slotted opening, a block slidably supported on said base plate and having a portion extending from said housing through said slotted opening, said block having a threaded bore in a portion of said block within said housing and a screw extending through a side wall and into said threaded bore of said block to move said block along said



slotted opening in a direction away from said projection for clamping said projection and said extending portion of said block against opposite walls of a said knock-out opening to clamp said housing to a said panel.

4,139,255

TERMINAL PIN HOLDING BLOCK

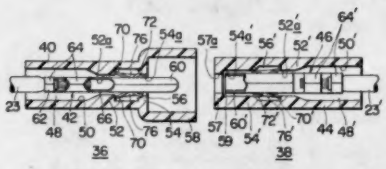
Shuichi Otani, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jul. 21, 1977, Ser. No. 817,618

Claims priority, application Japan, Jul. 22, 1976, 51/97808[U]

Int. Cl.[2] H01R *9/08*

U.S. Cl. 339—217 S **9 Claims**



1. A terminal pin holding block for providing an electrical connection between apparatus when coupled with another terminal pin holding block, comprising:

a housing having a through passage bounded by a wall, said wall including first and second engaging sections longitudinally spaced from each other to define therebetween an enlarged portion of said through passage; and

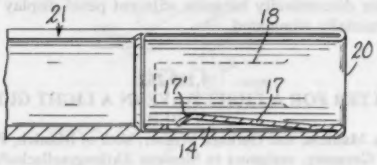
a terminal pin received in said through passage, said terminal pin having first and second lug portions which extend from a common limited portion of said terminal pin in opposite directions in parallel with the longitudinal axis of said terminal pin, said second lug portion projecting outwardly radially so that when said second lug portion is pressed to bend inwardly, said first lug portion projects radially outwardly,

the assemblage of said terminal with said housing being such that upon final fitting of said terminal pin to said housing, said second lug portion is tightly disposed in said second engaging section to be pressed inwardly causing said first lug portion to project radially outwardly to be received in said enlarged portion of said through passage thereby preventing said terminal pin from longitudinal movement toward said first engaging section.

4,139,256
ELECTRICAL CONTACT AND METHOD OF MAKING SAME

Jack Seidler, New Rochelle, N.Y., assignor to North American Specialties Corp., Flushing, N.Y.

Filed Sep. 15, 1977, Ser. No. 833,662
Int. Cl.[2] H01R 13/12
U.S. Cl. 339—258 R 7 Claims

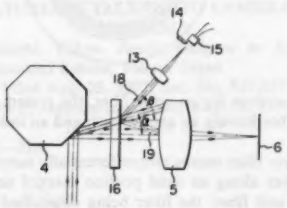


1. A one-piece electrical contact having a cylindrical bore comprising, at the entrance end of the bore, a two-layer annular zone of conductive material terminating in a folded edge extending around substantially the entire circumference of said entrance end, at least one pressure finger being integral with the inner layer.

4,139,257
SYNCHRONIZING SIGNAL GENERATOR

Kazuya Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1977, Ser. No. 835,783
Int. Cl.[2] G02B 27/17
U.S. Cl. 350—6.1 17 Claims



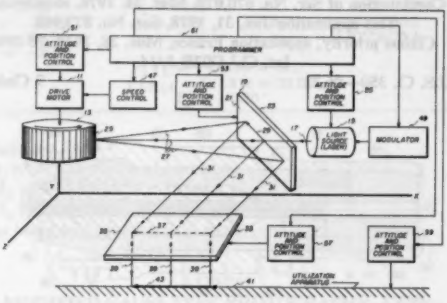
1. A synchronizing signal generator comprising:
a light source means emitting a modulated light beam used for scanning;
a deflector for deflecting said modulated light beam in a predetermined direction;
a beam splitter consisting of a first diffraction grating which diffracts a portion of said modulated light beam deflected by said deflector and a base carrying thereon said diffraction grating;
a photodetector;
means for deriving a scan synchronizing signal from a synchronizing signal beam which is a portion of said diffracted beam; and
means for feeding scan signals synchronized with said synchronizing signal into said light source means.

4,139,258
LASER SCAN CONVERTER

Frank J. Oharek, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1978, Ser. No. 893,545
Int. Cl.[2] G02B 27/17
U.S. Cl. 350—6.8 24 Claims

1. A scan converter, comprising in combination:
means having at least one radiant energy reflecting surface adapted for being rotated about an axis;
means having a radiant energy semi-reflecting surface spatially disposed along a first optical path from said at least one radiant energy reflecting surface means for timely re-reflecting the radiant energy received therefrom;
means having a radiant energy reflecting surface spatially disposed along a second optical path from said radiant energy semi-reflecting surface means for re-reflecting the radiant energy received therefrom; and
means spatially disposed from said at least one radiant energy reflecting surface for projecting a predetermined radiant energy through said radiant energy semi-reflective

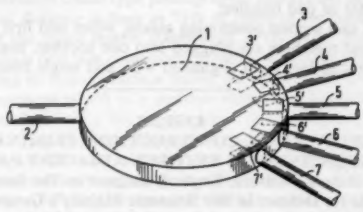


surface means directly to and from said at least one radiant energy reflecting surface means along said first optical path and on to said radiant energy reflective surface means along said second optical path as said at least one radiant energy reflecting surface means is being rotated about the aforesaid axis.

4,139,259
LIGHT DISTRIBUTOR FOR OPTICAL COMMUNICATION SYSTEMS

Ralf Kersten, Rottach-Egern, and Hans-Hermann Witte, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 3, 1977, Ser. No. 756,137
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1976, 2600893
Int. Cl.[2] G02B 5/14; G02F 1/13
U.S. Cl. 350—96.16 7 Claims



1. A light distributor connected to an incoming light guide and several outgoing light guides for distributing light arriving from the incoming light guide into the outgoing light guides, comprising a disk member having an electrically controllable index of refraction and parallel surfaces and of a material having properties of a low light absorption and low light scattering, said disk member having edge portions forming an abutting surface for each of the incoming and the outgoing light guides, said abutting surface for the incoming light guide being opposite the abutting surfaces for the outgoing light guides, a total width L for the abutting surfaces for the outgoing light guides being determined by the distance between the abutting surfaces of the incoming and outgoing light guides and by the unhampered spread of the light of the incoming light guide in said disk member perpendicular to the direction of propagation of the light in the disk and parallel to the parallel surface; and individual triggerable electrodes being disposed on said disk member adjacent the abutting surfaces for the outgoing light guides to electrically control the index of

refraction of the material adjacent the abutting surface for each outgoing light guide.

4,139,260

OPTICAL FIBERS BUNDLES CONNECTOR

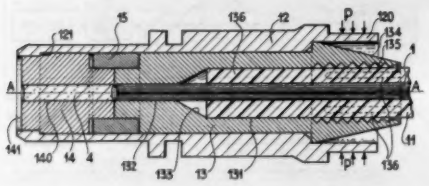
Jean Bouygues; Jacques Dubos, and André Jacques, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 670,072, Mar. 24, 1976, abandoned. This application Jan. 31, 1978, Ser. No. 873,968

Claims priority, application France, Mar. 28, 1975, 75 09919

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.22 **9 Claims**



1. A connector for connecting a first and a second bundle of optical fibers, each of said bundles having a protective sheath, said connector comprising a first and second members capable of being plugged in to one another, one of said member being a male member and the other a female member;

said first and said second member respectively including first and second positioning means for positioning respectively said first and said second bundle inside said first and said second member and first and second mechanical affixing means for affixing said first and said second member to said sheath of respectively said first and said second bundle;

said first member further including a single fiber: third positioning means for positioning said single fiber in alignment with said first bundle and securing means for preventing said third positioning means from escaping out of the front face of said first member;

said single fiber having a diameter at least equal to the diameter of said bundles;

and said second positioning means, when said first and second members are plugged into one another, placing said second bundle in alignment with said single fiber.

4,139,261

DISPLAY PANEL CONSTRUCTIONS ELIMINATING DISCONTINUITIES BETWEEN ADJACENT PANELS

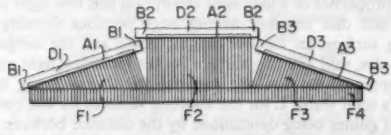
Cyril Hilsum, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, London, England

Filed Jan. 26, 1977, Ser. No. 762,702

Claims priority, application United Kingdom, Jan. 26, 1976, 2948/76

Int. Cl.² G02B *5/17*; G09F *13/20*

U.S. Cl. 350—96.27 **8 Claims**



1. A display of comparatively large size comprising a plurality of self-contained individual electrically addressable display panels each having a display zone for displaying visual information and arranged in a formation so as to collectively provide a composite display of increased area, the display zone of each of said individual panels being surrounded by a border portion of said panel which is incapable of displaying visual information, extends outwardly of said display zone, and has significant dimensions relative to the dimensions of said display zone of said panel, said display further comprising a fibre optic image transform construction arranged in front of the display panels for transforming an image collectively provided by the panels into a corresponding and continuous image in which the border discontinuity between adjacent panel display zones is substantially eliminated.

4,139,262

FILTER FOR A LIGHT WAVE IN A LIGHT GUIDING FIBER

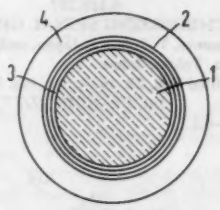
Hans Mahlein, and Gerhard Winzer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 601,269, Aug. 4, 1975, abandoned. This application Jan. 12, 1977, Ser. No. 761,006

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1974, 2442859

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.33 **4 Claims**



1. A filter system for an optic fiber, the system comprising:

an optic fiber having an axial length and an index of refraction n_f;

a multi-layer filter means circumferentially surrounding said optic fiber along an axial portion thereof and not interrupting said fiber, the filter being comprised of alternate layers of materials having high and low indices of refraction n_{1H}; and n_{1L}; and wherein

the indices of refraction of the fiber and the layers are related by

$$N < n_{1L} < n_{1H}$$

and wherein N is the effective guide index of guided modes of light in the fiber

$$N = n_f \sin \theta,$$

wherein θ is the zigzag angle of the guided modes in the fiber; and

said multi-layer filter means refracting and reflecting desired light components back into the fiber and absorbing undesired components.

4,139,263

OPTICAL DEVICE FOR PROJECTING A RADIATION BEAM ONTO A DATA CARRIER

Jean-Claude Lehureau, and Claude Bricot, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Sep. 24, 1976, Ser. No. 726,474

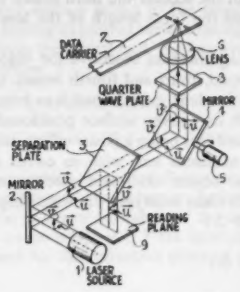
Claims priority, application France, Sep. 29, 1975, 75 29706

Int. Cl.² G11C *13/04, 7/02*

U.S. Cl. 350—157 **3 Claims**

1. An optical device for projecting a radiation beam onto a moving reflective data carrier, said device comprising an illumination source having a reflective exit surface for emitting said beam, birefractive and partially polarizing optical ele-

ments for the propagation of said beam towards said data carrier along a path, said optical elements being arranged along said path for keeping two orthogonal directions, in the wave plane orthogonal to said path, invariant in relation to said propagation path, said beam being composed of waves circularly polarized, and an objective for concentrating said beam



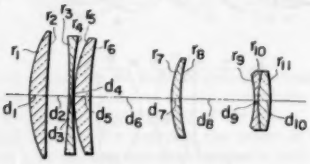
on said data carrier, said device further comprising a quarter wavelength plate relative to the mean wavelength of said beam, said plate being located on said path, parallel to said wave plane between the last of said optical elements and said objective, said plate having orthogonal neutral lines oriented at $\pi/4$ relative to said invariant orthogonal directions.

4,139,264

MINIATURIZED TELEPHOTO CAMERA LENS ASSEMBLY

Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1977, Ser. No. 827,637
Claims priority, application Japan, Aug. 26, 1976, 51/101958
Int. Cl.[2] G02B *13/02*
U.S. Cl. 350—216 **2 Claims**



1. A miniaturized telephoto camera lens assembly, comprising: in order, a first positive lens, a second negative lens, third and fourth positive meniscus lenses each of whose object side surfaces has a higher curvature than the image side surface, a fifth negative lens, and a sixth positive lens, said fifth and sixth lenses being adhered to each other, and said lens assembly satisfying the following conditions:
(1) $F/1.8 < F_{1.2.3} < F/1.2$,
(2) $F/2.3 < F_{1.2.3.4} < F/1.8$,
(3) $58 < \nu_1 \cdot \nu_3$,
(4) $\nu_2 < 30$,
(5) $55 < \nu_4 \cdot n_4 < 1.55$,
(6) $|n_5 - n_6| < 0.1$,
(7) $1.65 < n_5 \cdot n_6$, and
(8) overall length $< 0.85F$,
wherein:
F is the focal distance of the overall lens assembly,
$F_{1.2 \ldots i}$ is the composite focal distance of the first through the i-th lenses,
n_i is the refractive index at the surface distance line of the i-th lens, and
μ_i is the Abbie's number of the i-th lens, and

F = 100mm, f = 1:4.0, $\omega = \pm 6.2°$

$r_1 = 29.87$	$d_1 = 3.53$	$n_1/\nu_1 = 1.51633/64.1$
$r_2 = 215.57$	$d_2 = 4.20$	
$r_3 = -195.99$	$d_3 = 1.03$	$n_2/\nu_2 = 1.76182/26.6$
$r_4 = 90.38$	$d_4 = 0.05$	
$r_5 = 28.32$	$d_5 = 3.27$	$n_3/\nu_3 = 1.51633/64.1$
$r_6 = 76.39$	$d_6 = 16.58$	
$r_7 = 20.96$	$d_7 = 1.75$	$n_4/\nu_4 = 1.51874/64.5$
$r_8 = 26.26$	$d_8 = 14.80$	
$r_9 = -13.39$	$d_9 = 1.00$	$n_5/\nu_5 = 1.76200/40.2$
$r_{10} = 308.99$	$d_{10} = 2.06$	$n_6/\nu_6 = 1.80518/25.4$
$r_{11} = -26.98$		

$F_{1.2.3.} = F/1.449 = 69.0$
$F_{1.2.3.4} = F/1.818 = 55.0$
$\Sigma_p = -0.20$

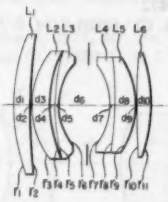
wherein:
r_j is the j-th radius of curvature,
d_k is the k-th surface distance,
Σ_p is the Petzval's sum, and
ω is the half-viewing field angle.

4,139,265

MODIFIED GAUSS TYPE PHOTOGRAPHIC LENS

Sei Matsui, Chiba, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jan. 6, 1977, Ser. No. 757,144
Claims priority, application Japan, Jan. 16, 1976, 51/3932
Int. Cl.[2] G02B *9/60*
U.S. Cl. 350—218 **4 Claims**



1. A modified Gauss type photographic lens system having a back focal distance as long as 71% or more of the total focal length of the entire system comprising, in the order from the object side, a first lens component which is a positive meniscus lens having its convex surface facing the object side, a second lens component which is a positive meniscus lens having its convex surface facing the object side, a third lens component which is a negative meniscus lens having its convex surface facing the object side, a fourth lens component which is a negative meniscus lens having its concave surface facing the object side, a fifth lens component which is a positive meniscus lens cemented to said fourth lens component and having its convex surface facing the image side, and a sixth lens component which is a biconvex lens having its more curved surface facing the image side, said lens system satisfying the following conditions:
(1) $0.7 < r_6/r_3 < 0.8$
(2) $0.7 < r_7/r_9 < 0.8$
(3) $0.95 < |r_3/r_9| < 1.05$
(4) $0.95 < |r_6/r_7| < 1.05$
(5) $0.29f < (r_6 + |r_7|)/2 < 0.32f$
and wherein the numerical data are as shown in the following table:

Radii	Thickness and air spaces	Refractive indexes	Abbe number
$r_1 = 79.457$			
	$d_1 = 8.915$	$nd_1 = 1.79631$	$\nu d_1 = 40.8$
$r_2 = 383.527$			
	$d_2 = 0.194$		
$r_3 = 41.473$			
	$d_3 = 9.109$	$nd_2 = 1.78797$	$\mu d_2 = 47.5$

-continued

Radii	Thickness and air spaces	Refractive indexes	Abbe number
$r_4 = 63.178$	$d_4 = 1.938$		
$r_5 = 98.837$	$d_5 = 2.132$	$nd_3 = 1.74000$	$\nu d_3 = 28.2$
$r_6 = 31.395$	$d_6 = 25.388$		
$r_7 = -31.977$	$d_7 = 2.519$	$nd_4 = 1.74000$	$\nu d_4 = 28.2$
$r_8 = -193.798$	$d_8 = 10.465$	$nd_5 = 1.74443$	$\nu d_5 = 49.4$
$r_9 = -40.0$	$d_9 = 0.194$		
$r_{10} = 395.930$	$d_{10} = 6.686$	$nd_6 = 1.79631$	$\nu d_6 = 40.8$
$r_{11} = -96.225$			

where f is the total focal length of the entire system, r, d, nd and νd respectively represent the curvature radius of each refracting surface, the distance between adjacent refracting surfaces, the refractive index and the Abbe number of the glass forming each lens component, and the subscripts represent the order from the object side.

4,139,266

MEDIUM MAGNIFICATION OBJECTIVE FOR VIDEO DISKS

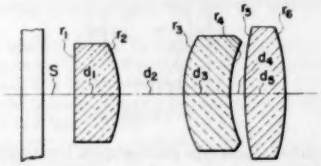
Toshimichi Koizumi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

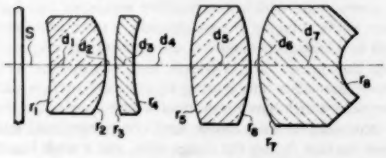
Filed Jan. 27, 1977, Ser. No. 763,082

Claims priority, application Japan, Jan. 30, 1976, 51-08344; Mar. 13, 1976, 51-14472

Int. Cl.[2] G02B 9/34, 9/16

U.S. Cl. 350—220 **9 Claims**





1. A medium magnification objective for video disks comprising a first, second and third lenses, said first lens being a thick positive lens, said second lens being a negative meniscus lens with its convex surface positioned toward the object side, said third lens being a positive lens, said medium magnification objective for video disks satisfying the following conditions:

(1) $2.4 \geqq |r_2|/d_1 \geqq 1.4$

(2) $1.9 \geqq r_3/f \geqq 1.1$

(3) $0.3 \geqq d_4/d_2 \geqq 0.14$

(4) $0.8 \geqq d_2/f \geqq 0.5$

(5) $2.3 \geqq f23/1 \geqq 1.7$

wherein reference symbol r2 represents the radius of curvature of the surface on the image side of the first lens, reference symbol r3 represents the radius of curvature of the surface on the object side of the second lens, reference symbol d1 represents the thickness of the first lens, reference symbol d2 represents the airspace between the first and second lenses, reference symbol d4 represents the airspace between the second and third lenses, reference symbol f1 represents the focal length of the first lens, reference symbol f23 represents the total focal length of the second and third lenses, and reference symbol f represents the focal length of the lens system as a whole.

6. A medium magnification objective for video disks comprising a first, second, third and fourth lenses, said first lens being a thick positive lens, said second lens being a negative meniscus lens with its convex surface positioned toward the object side, said third lens being a positive lens, said fourth lens being a negative meniscus lens with its covex surface positioned toward the object side, said medium magnification objective for video disks satisfying the following conditions:

(6) $4.2 \geqq |f_2|/f \geqq 2.5$

(7) $0.28 \geqq d_3/f \geqq 0.1$

(8) $5.5 \geqq d_7/d_3 \geqq 1.3$

(9) $0.8 \geqq r_8/f \geqq 0.6$

wherein reference symbol f8 represents the radius of curvature of the surface on the image side of the fourth lens, reference symbols d3 and d7 respectively represent thicknesses of the second and fourth lenses, reference symbol f2 represents the focal length of the second lens, and reference symbol f represents the focal length of the lens system as a whole.

4,139,267

LENS HAVING HIGH RESOLVING POWER

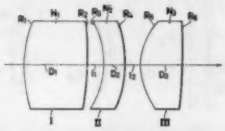
Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

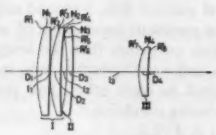
Filed Dec. 7, 1976, Ser. No. 748,197

Claims priority, application Japan, Dec. 11, 1975, 50/147860

Int. Cl.[2] G02B 9/34, 9/16

U.S. Cl. 350—223 **6 Claims**





1. A lens system having a high resolving power and object and image ends, comprising, in order from the object end, a first double convex lens, a second negative meniscus lens having its concave surface facing the object and a third positive lens having its convex surface facing the object end, the lens system satisfying the relation:

$$-0.18/F < 1/Rb < 0.18/F$$

$$-0.6/F < (Na - 1/Ra) < -0.4/F$$

wherein Ra is the radius of curvature of the surface of said second negative meniscus lens on the image end of the lens

system, Rb the radius of curvature of the surface of said third positive lens on the image end, F the focal distance of the total lens system and Na the refractive index of said second meniscus lens.

2. A lens system having a high resolving power and object and image ends, comprising: a first positive lens group including two positive meniscus lenses having their convex surfaces facing to the object end, a second negative meniscus lens having its concave surface facing to the object end and a third positive lens having its convex surface facing to the object end, all in order from the object end, the lens system satisfying the following relation:

$$-0.18/F < 1/Rb < 0.18/F$$

$$-0.25/F < (Na-1/Ra) < -0.2/F$$

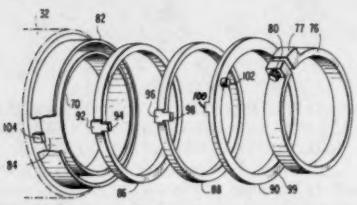
wherein Ra represents the radius of curvature of the surface of said second negative meniscus lens on the image end of the lens system, Rb the radius of curvature of the surface of said third positive lens on the image end, F the focal distance of the total lens system and Na the refractive index of said second meniscus lens.

4,139,268

STOP SYSTEM FOR THE FOCUS OF AN OPTICAL INSTRUMENT

Alan Litman, Pittsburgh, Pa., assignor to Smith & Wesson Chemical Company, Inc., Pittsburgh, Pa.

Filed Jun. 13, 1977, Ser. No. 806,204
Int. Cl.[2] G02B 7/04, 7/10
U.S. Cl. 350—255 **20 Claims**



1. A stop system for the focus of optical instrument having a pair of lenses and an imaging device comprising:

a first element for carrying one of the lens;

a second element for carrying the other of the lens and imaging device and movable relative to said first element;

a focusing ring carried by the instrument;

means cooperable between said focusing ring, said first element and said second element for moving said second element relative to said first element in response to rotation of said focusing ring; and

means including a plurality of rotatable cascade rings, a stop ring, and said focusing ring, each in coaxial alignment with the other, for limiting the number of revolutions of said focusing ring in at least one circumferential direction to a predetermined number of revolutions substantially proportional to the total number of cascade rings plus one.

4,139,269

MIRROR WITH RIM IN GROOVE MOUNTING

Willi Backenköhler, Hunoldstrasse 5, Wardenburg-Hundsmühlen, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 846,214
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 7634148; Oct. 29, 1976, 7634149; Jun. 13, 1977, 2726543
Int. Cl.[2] G02B 5/12, 7/18
U.S. Cl. 350—293 **10 Claims**

1. An accessory arrangement for an inside mirror and an outside mirror with reflecting means having a plane mirror surface on motor vehicles, comprising: an outside mirror on a vehicle, a mirror unit fastened on the inside of the vehicle and opposite said outside mirror, said mirror unit displaying space outside of said vehicle through an adjacent window pane, said mirror unit comprising a two-part hollow member having a housing with a peripheral mounting, said housing being cov-

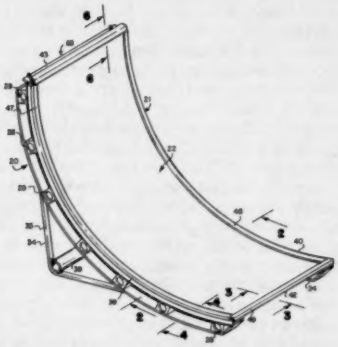
ered by a wall formed as a spherical section projecting from said housing, said wall having a mirror surface corresponding in size to the size of a regular rearview mirror and having a rim bent backwards, said rim being chamfered at its free end, said rim having a radially projecting peripheral shoulder engaging a peripheral groove of said mounting of said housing.

4,139,270

PANEL MOUNTING APPARATUS

James T. Dotson, Lot #109 Rancho Del Sol, Gilbert, Ariz. 85234

Filed Sep. 6, 1977, Ser. No. 830,564
Int. Cl.[2] G02B 5/10, 7/18
U.S. Cl. 350—296 **4 Claims**



1. In a device for receiving and redirecting radiant energy, said device having an elongate arcuate frame with a concave top and having spaced apart longitudinal sides and first and second lateral ends, improvements therein for detachably mounting flexible reflective panel in juxtaposition to said top, said panel having spaced apart longitudinal edges and first and second lateral edges,

said improvements including a pair of spaced apart elongate guide members carried on the top of said frame, each of said pair of guide members extending longitudinally of said frame and slideably receiving a respective longitudinal edge of said panel,

a lateral guide member carried by said frame proximate the first lateral end thereof and extending between said pair of elongate guide members and slideably receiving the first lateral edge of said panel, and retention means carried proximate the second lateral end of said frame for releasibly engaging the second lateral edge of said panel and

retaining said panel within said guide members, said retention means including:

(a) a bracket carried by said frame and rotatable about an axis generally parallel to the second lateral end of said frame and moveable in a direction generally perpendicular to the second lateral edge of said frame;

(b) a retention member carried by said bracket and having an open groove therein for receiving the second lateral edge of said panel; and

(c) biasing means normally urging said bracket in a direction generally toward said lateral guide member.

4,139,271

DISPLAY DEVICE

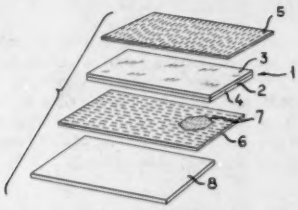
Kazuhiro Yoda, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Nov. 9, 1976, Ser. No. 739,867

Claims priority, application Japan, Nov. 11, 1975, 50-135558

Int. Cl.² G02F 1/13

U.S. Cl. 350—337 **2 Claims**



1. A display device, comprising: first and second glass plates disposed in a stacked condition for defining a liquid crystal panel unit; liquid crystal material disposed between said first and second glass plates and responsive to an electrical field applied thereto for changing polarization of light passing through said liquid crystal material; first and second polarizing plates respectively disposed above and below said liquid crystal panel unit and in a stacked condition therewith, said first and said second polarizing plates having respective polarizing axes having relative orientations differing by 90°, and said second polarizing plate having a hexagonal shaped minor region having a polarizing axis oriented parallel to the polarizing axis of said first polarizing plate and differing by 90° from the polarizing axis of the major portion of said second polarizing plate; six wedge-shaped electrodes disposed symmetrically in a hexagonal pattern on said liquid crystal panel unit in registration with said hexagonal shaped minor region of said second polarizing plate for receiving electrical potentials to apply to said liquid crystal material in registration with said hexagonal shaped minor region electrical fields independent of an electrical field applied to the remainder of said liquid crystal material for independently controlling the light transmissive properties of the portion of the stacked combination of said liquid crystal panel unit and said first and second polarizing plates that is in registration with said hexagonal shaped minor region; and a reflecting plate disposed opposite one of said polarizing plates.

4,139,272

ELECTRO-OPTIC PASSIVE DISPLAY DEVICE

Claude Laesser, La Chaux-de-Fonds; Rene Viennet, and Fereydoun Gharadjedaghi, both of Neuchatel, all of Switzerland, assignors to Ebauches S.A., Switzerland

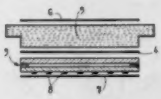
Filed May 13, 1977, Ser. No. 796,516

Claims priority, application Switzerland, May 20, 1976, 6638/76

Int. Cl.² G02F 1/13

U.S. Cl. 350—337 **7 Claims**

1. An electro-optic display device comprising, a polarizer for vertically polarizing light, an electro-optic display cell adjacent the polarizer for rotating the plane of polarization of light transmitted therethrough in the absence of an applied electric field and for transmitting light with its plane of polarization unchanged when an electric field is applied, a quarter-wave plate adjacent the side of said display cell opposite said polarizer for converting light from the cell to circularly polarized light of one handedness when an electric field is applied to said cell and for converting light from the cell to circularly polarized light of the opposite handedness when no electric field is applied to said cell, a cholesteric liquid crystal cell on the side of said quarter-wave plate opposite said electro-optic cell for reflecting circularly polarized light of one-handedness



whose wave lengths are within its reflection band and for transmitting the remainder of the light, and an illuminator on the side of said cholesteric liquid crystal cell opposite said electro-optic cell and said quarter-wave plate and having an emission spectrum within the reflection band of said cholesteric liquid crystal so that, during bright ambient conditions, dark information is displayed against a bright background and, during dark ambient conditions, bright information is displayed against a dark background.

4,139,273

METHOD FOR PREPARING AND OPERATING A SMECTIC LIQUID CRYSTAL DISPLAY CELL HAVING INDEFINITE STORAGE PROPERTIES

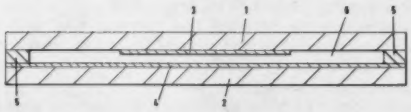
William A. Crossland, Harlow; Joseph H. Morrissy, Dunmow, and Barbara Needham, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,780

Claims priority, application United Kingdom, Jan. 6, 1976, 00316/76

Int. Cl.² G02F 1/13

U.S. Cl. 350—340 **4 Claims**



1. A method of preparing and operating a dynamic scattering liquid crystal cell comprising the steps of:

providing a pair of glass plates having transparent electrodes thereon;

providing homeotropic alignment inducing medium in the space between said plates;

securing said electrode plates together with an edge seal;

filling the remainder of said space with a smectic material having positive dielectric anisotropy;

applying alternating electric potential between said electrode for both writing a display and for erasing said display;

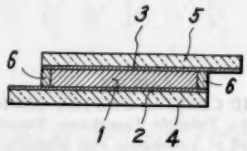
wherein a liquid crystal display cell can be operated in a manner to provide for electrically reversal storage of information.

4,139,274

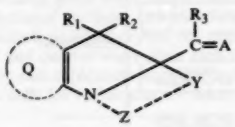
APPARATUS FOR CHANGING COLOR

Akio Yamashita, Kawanishi, and Masaaki Hayami, Okayama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation-in-part of Ser. No. 613,954, Sep. 16, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 734,627
Claims priority, application Japan, Sep. 18, 1974, 49-108250
The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.
Int. Cl.[2] G02F *1/17, 1/23*
U.S. Cl. 350—357 3 Claims

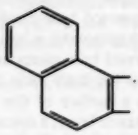


1. An apparatus for changing color comprising a pair of electrodes which are disposed with a specified space therebetween, at least one of said electrodes being transparent, said space together with the electrodes constituting a cell, and a solution in the space of said cell comprising a color changing dye in a non-protonic solvent therefor, the color of said solution changing, disappearing or appearing upon electrical stimulation, said dye being represented by the formula:



(I)

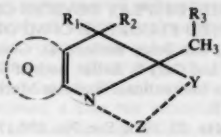
wherein Q representa a benzene ring with or without substituted radicals or Q represents



R_1 and R_2 represent a member selected from the group consisting of lower alkyl radicals, hydroxy-alkyl radicals and alkoxy-alkyl radicals, R_3 represents a member selected from the group consisting of hydrogen, alkyl radicals, alkoxy-radicals, halogen, a nitrile radical, aromatic radicals and phenoxy radicals, Y represents a member selected from the group consisting of oxygen and sulfur; Z represents an unsubstituted or alkyl substituted alkylene radical of 2 to 4 carbon atoms which alkylene radical forms a ring structure together with

$$-N-\overset{\|}{C}-Y-;$$

and A represents the radical formed when said dye is produced by a condensation reaction of the methyl radical or methylene radical in the 2-position of a precursor indoline derivative represented by the formula:



(II)

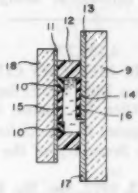
wherein Q, R_1, R_2, R_3, Y and Z are defined as in formula (I) above with a member selected from the group consisting of aromatic aldehydes, heterocyclic aldehydes, aromatic nitroso compounds and heterocyclic nitroso compounds.

4,139,275

ELECTROCHROMIC DISPLAY

Kozo Yano; Yasuhiko Inami, both of Tenri, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1977, Ser. No. 773,774
Claims priority, application Japan, Mar. 2, 1976, 51/22969; Apr. 20, 1976, 51/45227
Int. Cl.[2] G02F *1/17, 1/23*
U.S. Cl. 350—357 7 Claims



1. An electrochromic display comprising an electrochromic transition metal oxide said electrochromic display deposited on a transparent display electrode, and a counter electrode, containing an electrolyte in solution in an organic solvent, which solution is in contact with the transition metal oxide, said organic solvent comprising at least one member selected from the group consisting of ketones represented by the chemical formula $C_nH_{2n+1}COC_mH_{2m+1}$ wherein n = 1, 2 and m = 2 ~ 4; alkyl acetates represented by the chemical formula of $CH_3COOC_mH_{2m+1}$ wherein m = 2, 3; ethylene glycol monoalkoxy acetates represented by the chemical formula of $CH_3COOCH_2CH_2OC_nH_{2n+1}$ wherein n = 1, 2; and diethylene glycol monoalkoxy acetates represented by the chemical formula of $CH_3COOCH_2CH_2OCH_2CH_2OC_nH_{2n+1}$ wherein n = 1 ~ 4.

4. A reflective electrochromic display cell comprising an electrochromic transition metal oxide deposited on a transparent display electrode, and a counter electrode, said electrodes defining therebetween reflective, white background electrolyte paste, said electrolyte paste containing a mixture of an electrolyte in solution in an organic solvent and an inorganic white powder, said organic solvent comprising at least one member selected from the group consisting of ketones represented by the chemical formula of $C_nH_{2n+1}COC_mH_{2m+1}$ wherein n = 1, 2 and m = 2 ~ 4; alkyl acetates represented by the chemical formula $CH_3COOC_mH_{2m+1}$ wherein m = 2, 3; ethylene glycol monoalkoxy acetates represented by the chemical formula of $CH_3COOCH_2CH_2OC_nH_{2n+1}$ wherein n = 1, 2; and diethylene glycol monoalkoxy acetates represented by the chemical formula of $CH_3COOCH_2CH_2OCH_2C$-$H_2OC_nH_{2n+1}$ wherein n = 1 ~ 4.

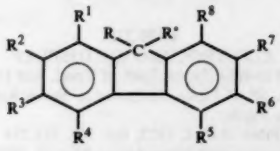
4,139,276

ELECTROCHROMIC DISPLAY DEVICES COMPRISING SUBSTITUTED FLUORENE COMPOUNDS

Nicholas J. Clecak, San Jose; Barbara D. Grant, Palo Alto; Annette B. Jaffe, and Gary S. Keller, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,170
Int. Cl.[2] C09K *3/00*; G02F *1/17, 1/23*
U.S. Cl. 350—357 **6 Claims**

1. In a reversible electrochromic display device comprising a reactive medium between two electrically conductive electrodes at least one of which is transparent, said medium comprising an anhydrous solvent and an oxidant/reductant pair in which the reductant is an electron acceptor, the improvement according to which the oxidant is a substituted fluorene compound having the formula



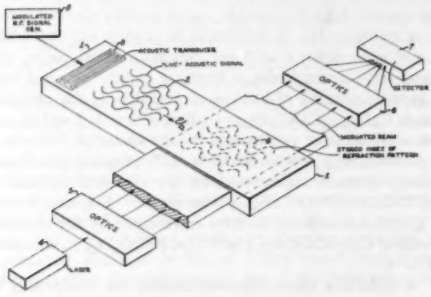
wherein each of R and R° is hydrogen or an alkyl group having up to 20 carbon atoms and each of R^1 through R^8 is hydrogen or an alkoxy group containing up to 20 carbon atoms, with at least 2 of the groups R^1 through R^8 being alkoxy groups.

4,139,277

ACOUSTO-OPTIC MEMORY CORRELATOR

Norman J. Berg, Baltimore, Md.; Bob L. Smith, deceased, late of Huntsville, Ala. by Allen B. Adams, legal representative, Cupertino, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 7, 1977, Ser. No. 804,206
Int. Cl.[2] G02F *1/11*
U.S. Cl. 350—358 **6 Claims**



1. An acousto-optic apparatus for providing the correlation of a first signal and a stored signal, comprising,

an acousto-optic interaction medium having said stored signal stored therein as a spatially varying index of refraction pattern,

said medium having an acoustic transducer means for converting an electrical signal to an acoustic signal disposed thereon to one side of said spatially varying index of refraction pattern,

means for applying a high-frequency A.C. signal to said transducer means, said signal having an envelope corresponding to said first signal,

laser means directed to transmit a laser beam across said medium at the area of said stored index of refraction pattern and across the path of said acoustic signal in said medium, and

detector means for detecting said laser beam after it traverses said acousto-optic interaction medium,

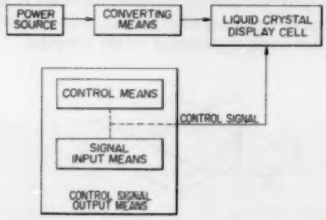
whereby said detector means produces a signal representative of the correlation of said first signal and said stored signal.

4,139,278

LIQUID CRYSTAL DISPLAY DEVICE

Seiichi Matsumoto; Tokuichi Tsunekawa; Takashi Uchiyama; Naoki Ayata, all of Yokohama; Yoji Matsufuji, Tokyo, and Yukitoshi Ohkubo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1976, Ser. No. 709,077
Claims priority, application Japan, Jul. 31, 1975, 50-94057; Aug. 1, 1975, 50-93955; Aug. 9, 1975, 50-96901; Aug. 9, 1975, 50-96903
Int. Cl.[2] G02F *1/13*
U.S. Cl. 350—332 **41 Claims**



1. A liquid crystal display device comprising:

(a) a liquid crystal display cell, including

a pair of mutually opposed base plates, at least one of said base plates being transparent; a resistance layer disposed on one of the opposed base plates and having connecting terminals provided on both ends thereof; an electrode layer disposed on a surface of the other base plate, opposed to said resistance layer, a nematic liquid crystal, said liquid crystal being a field effect twisted nematic liquid crystal, and being held between said resistance layer and said electode layer; and a pair of polarizing plates being disposed to hold therebetween said pair of base plates;

(b) alternating current output means for generating an AC voltage and having output terminals coupled to the connecting terminals at both ends of said resistance layer so as to impart a potential gradient to said resistance layer;

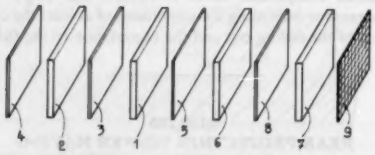
(c) control signal output means for generating AC voltage to control the display, wherein an output terminal of said means is connected to said electrode layer, and said AC voltage is smaller in peak to peak value than the AC voltage generated by said alternating current output means; and

(d) synchronizing means connected to said AC output means and said control signal output means to cause the AC voltages from both said output means to be conformed in their frequencies, phases, wave forms and DC reference levels.

4,139,279
ELECTRONIC INSTRUMENT

Claude Laesser, La Chaux-de-Fonds; René Viennet, Neuchatel, and Hubert Portmann, Colombier, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed May 13, 1977, Ser. No. 796,526
Claims priority, application Switzerland, May 20, 1976, 6336/76
Int. Cl.[2] G02F *1/13*
U.S. Cl. 350—334 1 Claim

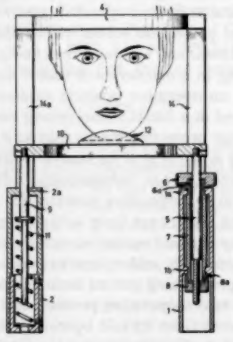


1. An electronic instrument having a battery comprising, a polarizer for vertically polarizing light, an electro-optic display cell adjacent the polarizer for rotating the plane of polarization of light transmitted therethrough in the absence of an applied electric field and for transmitting light with its plane of polarization unchanged when an electric field is applied, a quarter-wave plate adjacent the side of said electro-optic cell opposite said polarizer for converting light from the cell to circularly polarized light of one handedness when an electric field is applied to said cell and for converting light from the cell to circularly polarized light of the opposite handedness when no electric field is applied to said cell, a cholesteric liquid crystal cell on the side of said quarter-wave plate opposite said electro-optic cell for reflecting circularly polarized light of one handedness within a given wave length band and for transmitting the remainder of the light, and photo-electric cells on the side of said cholesteric liquid crystal cell opposite said electro-optic cell and said quarter-wave plate such that light which is not reflected by said cholesteric liquid crystal cell activates the photo electric cells for recharging the battery.

4,139,280
HEAD REST FOR OPHTHALMOLOGICAL EXAMINATION

Kurt Köhler, Königsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jul. 7, 1976, Ser. No. 703,283
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1975, 7527790[U]
Int. Cl.[2] A61B *3/00*
U.S. Cl. 351—38 2 Claims

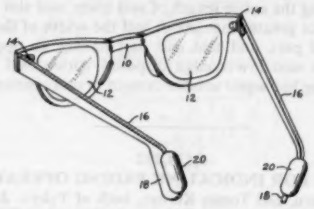


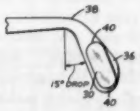
1. A head rest for an instrument used for ophthalmological examinations comprising two vertical columns mounted in spaced relation on the base of said instrument, a vertical post mounted on each of said vertical columns, a forehead rest mounted on said vertical posts and spanning the space therebetween, said posts being offset rearwardly from said columns, a transverse bar mounted on said columns and spanning the space therebetween, a chin rest mounted on said transverse bar, said chin rest being located in front of and offset from said posts, and means for elevating said transverse bar with respect to said columns, said elevating means comprising an elevating screw and nut mounted in one of said columns and a spindle which slides in a bearing in the other of said columns.

4,139,281
WEIGHT FOR SPECTACLE FRAME AND METHOD OF ATTACHMENT

George J. Luttner, 128 E. Second Ave., Latrobe, Pa. 15650

Filed May 18, 1977, Ser. No. 798,039
Int. Cl.[2] G02C *5/14*
U.S. Cl. 351—111 4 Claims





1. In combination:
an eyeglass frame having a forward lens supporting part and generally parallel temple bars pivotally connected to said lens supporting part at the ends thereof and adapted to extend rearwardly along the sides of the head and over the ears of the wearer,
each said temple bar including a generally straight portion and a spatula-like rearward end part angled downwardly relative to the respective straight portions so as to fit around the rear portion of the ears of the wearer,
each said end part having a lower edge extending from its juncture with the respective straight portion to the tip of said end part and adapted to rest on the ear,
counter weights of material having a density much higher than that of said temple bars secured to respective said end parts and extending generally along the longitudinal dimension of their respective end parts to points near the respective tips of said end parts,
said counter weights protruding inwardly toward each other from respective said end portions and being spaced from respective said lower edges so as to form a step in each of said end portions adapted to space said lower edges away from the head of the wearer in which said counter weight is mounted in its entirety on the head side of the respective spatula-like end part.

4. In combination:
an eyeglass frame having a forward lens supporting part and

generally parallel temple bars pivotally connected to said lens supporting part at the ends thereof and adapted to extend rearwardly along the sides of the head and over the ears of the wearer,

each said temple bar including a generally straight portion and a spatula-like rearward end part angled downwardly relative to the respective straight portions so as to fit around the rear portion of the ears of the wearer,

each said end part having a lower edge extending from its juncture with the respective straight portion to the tip of said end part and adapted to rest on the ear,

counter weights of material having a density much higher than that of said temple bars secured to respective said end parts and extending generally along the longitudinal dimension of their respective end parts to points near the respective tips of said end parts,

said counter weights protruding inwardly toward each other from respective said end portions and being spaced from respective said lower edges so as to form a step in each of said end portions adapted to space said lower edges away from the head of the wearer,

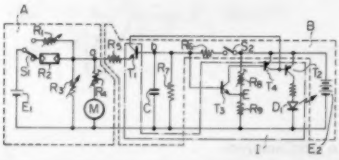
said counter weights each comprising a generally cylindrical body having rounded ends and a longitudinal slot therein extending the entire length of said body, said slot having a depth not greater than about half the width of the respective end part, and said end part having an upper edge opposite said lower edge disposed within said slot and including hot water soluble cement in said counter weight slot.

4,139,282

DEVICE FOR INDICATING FADING OPERATION

Yasuo Ishiguro, and Tomio Kurosu, both of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed May 17, 1977, Ser. No. 797,745
Claims priority, application Japan, May 17, 1976, 51-55459
Int. Cl.[2] G03B *21/36*
U.S. Cl. 352—91 C **6 Claims**



1. Device for indicating fading operation in a cinecamera comprising:

a diaphragm control circuit for generating a controlled voltage such as a scene light indicating voltage indicative of the scene brightness and an adjusted voltage by means of a manually adjustable resistor,

diaphragm driving means receiving the controlled voltage so as to actuate the diaphragm driving means for setting the diaphragm of the camera to an aperture determined by the controlled voltage,

a capacitor-resistor circuit connected to the diaphragm control circuit for selectively applying to the diaphragm control circuit a constant voltage for the charging thereof and removing from the diaphragm control circuit the constant voltage for the discharging thereof so that the diaphragm is continuously actuated with the lapse of time to effect the fading-in and fading-out,

a first comparator connected to the outputs of the capacitor-resistor circuit and the diaphragm control circuit so as to receive both the output voltages thereof for comparing the same with each other thereby issuing a signal when both the output voltages are made equal to each other,

a faded-out voltage generating circuit for sensing a predetermined voltage of the capacitor-resistor circuit by which the fading-out is completed so as to issue the predetermined voltage,

a second comparator connected to the outputs of the capacitor-resistor circuit and the faded-out voltage generating circuit so as to receive the output voltages thereof to compare the same with each other thereby issuing a signal when the output voltage of the capacitor-resistor circuit reaches the predetermined voltage for the completion of the fading-out, and

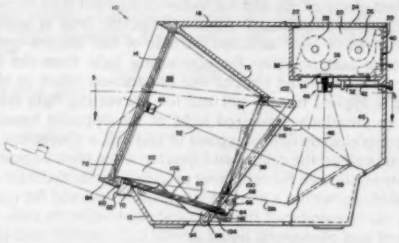
indicating means connected to the outputs of the first and the second comparator so as to receive the output signals thereof for indicating the conditions of at least the completion of the fading-out and the completion of the fading-in.

4,139,283

REAR PROJECTION VIEWER HAVING AUTOMATICALLY ERECTING AUXILIARY SCREEN

Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1978, Ser. No. 867,016
Int. Cl.[2] G03B *21/10*
U.S. Cl. 352—104 **6 Claims**



1. Photographic apparatus for projection of an image of given size recorded on transparent photographic film for viewing thereof, said apparatus comprising:

a housing defined in part by a first rear projection screen, said first rear projection screen being attached to other portions of said housing in a manner such that it is manually movable from an operative position to an inoperative position;

image projection means, including a projection lamp and lens assembly, mounted within said housing for projecting the image onto said first screen in a diverging path at least in part along an axis substantially normal to said first screen with the image substantially filling said first screen when located at its said operative position;

a second rear projection screen substantially smaller than said first screen, said second screen being mounted within said housing in a manner such that it may be selectively located in an operative position substantially normal to said axis and at a location therealong substantially closer to said image projecting means than said first rear projection screen when it is at its said operative position, with the projected image substantially filling said second screen, or in an inoperative position also within said housing wherein it does not lie in said diverging path; and

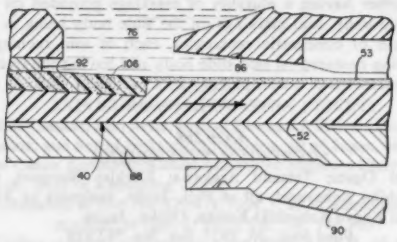
means for moving said second screen from its said inoperative position to its said operative position responsive to said first screen being moved from its said operative position to its said inoperative position and for moving said second screen from its said operative position to its said inoperative position responsive to said first screen being moved from its said inoperative position to its said operative position.

4,139,284

FILM PROCESSING CASSETTE CONTAINING MEANS FOR ABSORBING EXCESS FILM PROCESSING FLUID

Joseph A. Stella, Peabody, Mass., and Frank W. Knight, Salem, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1977, Ser. No. 791,026
Int. Cl.[2] G03C *11/00*
U.S. Cl. 352—130 3 Claims



1. In a multipurpose cassette containing a strip of photographic film configured to be exposed and treated with processing fluid, means when driven for advancing said film strip within said cassette, a processing fluid applicator for applying said processing fluid to a given length of said film strip to develop viewable images thereon, said applicator having an applicator surface in facing relation to said film strip, said applicator surface including means for depositing said processing fluid on said film strip, support means for initially supporting said film at a given distance from said applicator surface, so as to provide a processing fluid coating of predetermined thickness on said given length of said film strip during advancement thereof, and means operative when said coating has been deposited on said given length of said film strip for increasing said given distance between said applicator surface and said support means to thereby allow subsequent free travel of said film strip therebetween, said increase of said given distance allowing deposit of an excess of processing fluid on said film strip, the improvement comprising:

absorption means carried by said film strip for absorbing said excess fluid deposited on said film strip when said spacing is increased, said absorption means comprising a pad of absorbent material secured to said film strip and having its leading end, as viewed with respect to film strip advancement during deposit of said processing fluid, pressed into the surface of said film strip.

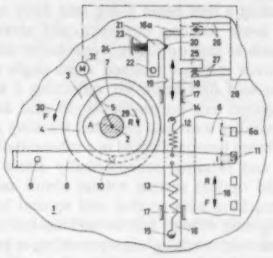
4,139,285

REVERSIBLE INTERMITTENT FILM DRIVE FOR MOTION-PICTURE PROJECTOR

Karl Ziegler, Nellingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1977, Ser. No. 775,361
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609378
Int. Cl.[2] G03B *1/22*
U.S. Cl. 352—194 10 Claims

1. A film-transport mechanism for perforated strip film, said mechanism comprising: a film-transport element having a claw engageable in a perforation of the film and displaceable so as to move the latter in either of two mutually opposite transport directions; a cam rotatable in a forward and reverse mutually opposite circumferential directions and formed with a forward cam surface and a reverse cam surface juxtaposed therewith and spaced therefrom, each of said surfaces having a respective film-transport-section, claw-engagement-section and claw-disengagement-section located at opposite sides of said film-transport-section, and claw-return-section; a cam follower connected with said film-transport element having said claw and being displaceable in a forward-drive position into engagement with said forward cam surface and in a reverse-drive position into engagement with said reverse cam surface, said film-transport sections of said surfaces directly confronting each other over the same angular segments of said cam and being spaced apart at their ends so that on displacement of said cam follower at said ends from one of said cam surfaces to the other cam surface said claw moves through a distance substantially equal to L-l, wherein L-is the length of one of said perforations and l-is the length of said claw, said sections of each of said cam surfaces being shaped so that on displacement of said cam follower engaging one of said surfaces of said cam and thereby on displacement of said claw the latter is moved toward engagement with the film at the leading end of the perforation, thereafter displaced to move said film in one of said transport directions, thereafter withdrawn from the leading end of the perforation, and thereafter returned in said direction to a position aligned with a trailing perforation of



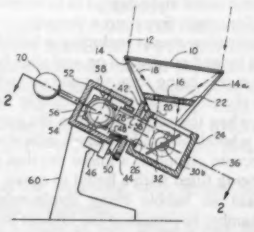
said film; means for urging said cam follower into engagement with said forward and reverse cam surface and connected with said film-transport element; and reversible drive means operative in two mutually opposite senses and connected to said cam for rotating the latter in said two mutually opposite circumferential directions, whereby by operation of said drive means in one of said senses and by rotation of only one cam in one of said circumferential directions said cam follower is displaced into engagement with one of said surfaces of said cam and moved in engagement with the same so that the film is engaged and transported in one of said transport directions, whereas by subsequent operation of said drive means in the other sense and rotation of the same one cam in the other circumferential direction said cam follower is displaced into engagement with the other surface of said cam and moved in engagement with the same so that the film is engaged and transported in the other transport direction.

4,139,286

APPARATUS FOR CONCENTRATING SOLAR ENERGY

Leopold A. Hein, Rte. 7, Fayetteville, Tenn. 37334, and William N. Myers, 4306B Boxwood Ct., Huntsville, Ala. 35805

Filed Jan. 30, 1976, Ser. No. 653,872
Int. Cl.[2] G03B *21/00;* F24J *3/02*
U.S. Cl. 353—3 6 Claims



1. Apparatus for converting concentrated solar radiation

into a beam of fixed orientation for supplying thermal energy to an associated solar appliance comprising:

an optical system having a primary lens assembly and a secondary lens assembly for collecting and concentrating solar radiation rays and converting said radiation rays into a beam of parallel rays of radiation;

said primary lens assembly including a plurality of individual lenses arranged in a common plane in the form of a matrix to produce a composite Fresnel lens;

said secondary lens assembly including a plurality of secondary associated lenses arranged in a matrix form corresponding to that of said primary lenses mounted in a spaced parallel plane below the plane of said primary lenses;

tracking means for rotating said optical system about a daily tracking axis to follow the path of the sun during the day and about a seasonal tracking axis to adjust for seasonal changes in the sun's position;

a first mirror member for receiving said beam of parallel rays and reflecting a first beam along said daily tracking axis, said first beam rotating concentrically about said daily tracking axis as said optical system tracks the sun;

a second mirror member inclined at an angle of forty-five degrees to said first beam for reflecting a second beam along a second axis perpendicular to said daily tracking axis and parallel with said seasonal tracking axis;

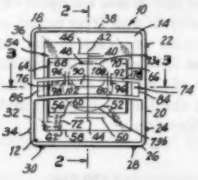
said second beam being reflected in a substantially horizontal direction and rotating concentrically about said second axis as said optical system rotates about said daily and seasonal tracking axes so that said second beam remains fixed along said second axis as said optical system is rotated about said tracking axes providing a beam of fixed orientation to be directed to said solar appliance for supplying thermal energy thereto.

4,139,287

PROJECTOR LEVELING AND FOCUSING AID AND METHOD OF USING SAME

Bruno E. Wessinger, 165 Harbor South, Amityville, N.Y. 11701

Filed Mar. 31, 1977, Ser. No. 783,273
Int. Cl.[2] G01C *9/24*; G03B *21/54*
U.S. Cl. 353—120 **2 Claims**



1. A leveling and focusing aid for a still image projector, said aid comprising:

(a) a rectangular slide body of a rigid transparent material of the shape of and having overall dimensions which are substantially the same as the shape and overall dimensions of a standard transparency or slide holder so that said body is constructed and adapted to be received within said projector for projection onto a screen;

(b) a level indication means including a bubble level indicator carried by and positioned on said slide body, said level indication means being so positioned on and oriented with respect to the slide body that the bubble indicates a level condition when the slide body is in the projector and the projector is level, said bubble level indicator comprising a narrow arcuate chamber, a major portion of said arcuate chamber being filled with a liquid to create a bubble of air therein, said air bubble being displaceable within said arcuate chamber to remain at the highest point therein and being responsive to the degree of deviation of said projector from the horizontal, said air bubble occupying the midpoint of said arcuate chamber when said slide body is level and said projector is horizontal; and

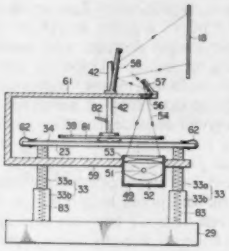
(c) said slide body having at least one marking the image of which on the screen is oriented in a certain predetermined relationship to the indicator when the projector is level whereby such condition will be indicated on the screen, said at least one marking being positioned on said slide body and constructed and arranged with said arcuate chamber to indicate the extent of displacement of said air bubble from the midpoint of said arcuate chamber, and further having a plurality of markings provided on the slide body, said markings on the slide body being in the form of concentric rectangles, each of said rectangles being centered on said slide body and having the overall dimensions of a transparency of a particular size.

4,139,288

MICROFILM TYPEWRITER

Takashi Ogata; Tatsumi Arakawa; Kiichiro Sasaguri, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1977, Ser. No. 782,819
Claims priority, application Japan, Mar. 31, 1976, 51-35649
Int. Cl.[2] B41B *15/06, 15/16*
U.S. Cl. 354—7 **10 Claims**



1. A microfilm typewriter comprising:

means for designating a character, numeral or symbol;

support means for supporting a recording medium having a layer of a dispersion imaging material formed on a substrate;

a printing light source for generating light of energy density high enough to cause a sufficient dispersion of the dispersion imaging material immediately to form an image without any development process when the light is applied to the recording medium;

an optical mask having formed thereon character, numeral and symbol patterns of a size in the range of about 20 to about 500 μm, which converts the light of the printing light source into a light of a pattern of the character, numeral or symbol designated by the designating means to irradiate the recording medium with the converted light of the character, numeral or symbol pattern, the size of the character, numeral or symbol pattern to achieve printing being in the range of about 20 to about 500 μm;

first means for moving the optical mask and the printing light source relative to each other to select and irradiate the designated character, numeral or symbol pattern with the light of the printing light source;

second means for moving the recording medium support means and the position of irradiating the recording medium with the converted light of the character, numeral or symbol pattern relative to each other with accuracy high enough to print characters, numerals or symbols one by one on the recording medium at predetermined positions; and

projecting means for optically providing on a fixed screen a magnified display of the character, numeral or symbol

printed on the recording medium in the neighborhood of the printing position during the printing operation, the projecting means including an optical system for applying a read-out light to a predetermined region including the printing position of the recording medium to project the character, numeral or symbol printing in the predetermined region to the fixed screen and means for interlocking the optical system with the movement of the second moving means.

4,139,289

EXPOSURE COMPUTATION CIRCUIT

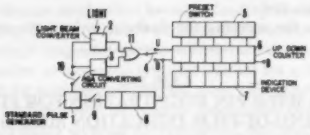
Sadao Yamada; Isao Arita, both of Kawasaki; Tadashi Ito, Yokohama, and Soichi Nakamoto, Machida, all of Japan, assignors to Canon Kabushiki Kaisha and Tokyo Shibaura Electric Co., Ltd., both of Kanagawa, Japan

Continuation of Ser. No. 521,876, Nov. 7, 1974, abandoned. This application Dec. 1, 1976, Ser. No. 746,205

Claims priority, application Japan, Nov. 8, 1973, 48-125735; Nov. 15, 1973, 48-128652

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—23 D **6 Claims**



1. An exposure computation system comprising:

(a) a first conversion means for converting the intensity of light into pulses of a number inversely proportional to the logarithm of the intensity of light;

(b) a first counter for counting the pulses from said first conversion means and generating a first digital output corresponding to the number of pulses counted thereby;

(c) a pulse generating means for generating pulses at a fixed period;

(d) a second counter for counting pulses from said pulse generating means and generating a second digital output corresponding to the number of pulses counted thereby;

(e) a second conversion means coupled to said second counter to convert the second digital output of the second counter to a third digital output inversely proportional to the logarithm of said second digital output;

(f) comparison means for comparing said first digital output and third digital output and generating a signal when said first digital output and third digital output have achieved a predetermined relationship; and

(g) a shutter control means, for placing a shutter in an opened state from the start of the counting of said second counter until a signal is generated by said comparison means and closing the shutter corresponding to a signal of said comparison means.

4,139,290

LENS STOP AUXILIARY BRAKE CONTROL DEVICE IN AUTOMATIC EXPOSURE CAMERA OF THE LENS STOP VALUE CONTROL TYPE

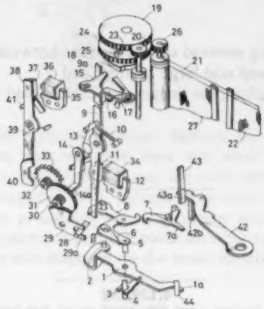
Yukio Takaoka, Asaka, and Yoshio Sawada, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1978, Ser. No. 874,084

Claims priority, application Japan, Feb. 28, 1977, 52-24211[U]

Int. Cl.[2] G03B *7/08, 9/06*

U.S. Cl. 354—43 **1 Claim**



1. A lens stop auxiliary brake control device for use in an automatic exposure camera of the lens stop value control type in which a slow speed mechanism operating in association with a lens stop operating member actuated by a lens stopping operation is provided and the operation of the slow speed mechanism is suspended by deenergizing a control magnet, said slow speed mechanism being made up of a train of gears to the shaft of one of which a ratchet wheel is fixedly secured, said auxiliary brake control device comprising:

a brake magnet;

a brake member for applying a brake force to said ratchet wheel by deenergizing said brake magnet;

a light measuring circuit for measuring light from an object to be photographed which has passed through a lens stop;

a differentiation circuit for differentiating with time an output of said light measuring circuit;

a reference voltage generating circuit for generating a reference voltage; and

a comparison circuit for comparing the output of said differentiation circuit with said reference voltage, so that when said output of the differentiation circuit coincides with said reference voltage in said comparison circuit, said brake magnet is deenergized so as to apply a brake force to said lens stop operating member through said ratchet wheel.

4,139,291

SYSTEM AND METHOD FOR OBTAINING WIDE SCREEN SCHLIEREN PHOTOGRAPHS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Shakkottai P. Parthasarathy, Burbank, Calif.

Filed Feb. 9, 1978, Ser. No. 876,441

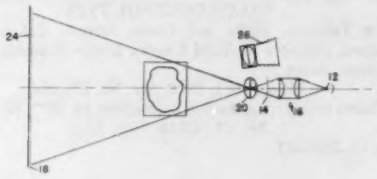
Int. Cl.[2] G03B *29/00;* G02B *5/30;* H01J *3/14*

U.S. Cl. 354—77 **8 Claims**

8. A method for obtaining wide screen Schlieren photographs, the steps comprising:

A. directing a beam of light along a path extended from a source through a small grating to a projection lens and

thence to a large grating for thus projecting a magnified image of the small grating on the large grating;



B. positioning material to be examined between said projection lens and said large grating; and

C. photographing the image projected on said large grating.

4,139,292

PHOTOGRAPHIC APPARATUS FOR PRODUCING AN IDENTITY CARD

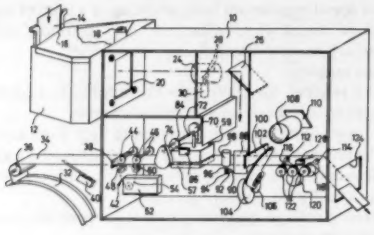
Luigi Chiesa, Turin, Italy, assignor to Morenar S.A., Friborg, Switzerland

Filed May 12, 1977, Ser. No. 796,364

Claims priority, application Italy, Sep. 10, 1976, 69195 A/76

Int. Cl.[2] G03B *17/24*

U.S. Cl. 354—109 **12 Claims**



1. Photographic apparatus for producing an identity card on photosensitive material with alphanumeric data photographed from a data-bearing card and with a picture of a person photographed selectively either from the actual person or from an existing photograph of the person, the apparatus comprising means for positioning said data-bearing card and for positioning said existing photograph, means for illuminating the data-bearing card and the existing photograph, means for producing images of the data-bearing card and of the existing photograph respectively on first and second predetermined portions of the photosensitive material to said images, selectively operable means for masking said second predetermined portion of the photosensitive material from any exposure to light during exposure of said first predetermined portion of the photosensitive material to the image of the data-bearing card, means for producing an image of the actual person on said second predetermined portion of the photosensitive material, means for selectively producing the image of the person on the second predetermined portion of the photosensitive material from the existing photograph or from the actual person, and selectively operable means for producing a controlled exposure of said second predetermined portion of the photosensitive material to said image of the actual person.

4,139,293

FLASHGUN

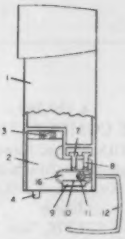
Maynard F. Wolfe, Dodwell Mansions #11, 77 Peak Rd., Hong Kong, Hong Kong

Filed Feb. 14, 1977, Ser. No. 768,418

Claims priority, application United Kingdom, Nov. 4, 1976, 45982/76

Int. Cl.[2] G03B *15/03*

U.S. Cl. 354—141 **5 Claims**



1. A camera flashgun unit comprising:

(a) a housing containing a flashgun and defining a recess therein,

(b) a plug adaptor provided with at least two different plug members, each plug member for connection to a different type camera flash socket, said plug adaptor being removably received in the flashgun housing by insertion into said recess in at least two different positions such that for each position one plug member is exposed for interconnecting the flashgun and the camera socket while the other plug member is retained within the recess in an inoperative position, and

(c) means for securing the flashgun unit to the camera.

4,139,294

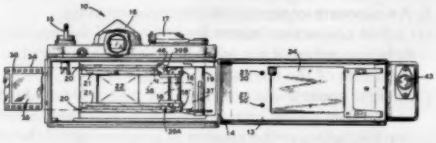
CAMERA WITH PIN REGISTRATION FOR FILM AND END-OF-FILM INDICATION MEANS

James T. Aneshansley, Brooklyn; Gerard J. Diebold, Spring Valley, both of N.Y., and Alfred I. Thumim, Teaneck, N.J., assignors to Richmark Camera Service, Inc., Carlstadt, N.J.

Filed Mar. 14, 1977, Ser. No. 777,463

Int. Cl.[2] G03B *17/36, 1/00*

U.S. Cl. 354—217 **10 Claims**



1. In a camera operable with a strip of film having top and bottom edges extending in the direction of film advance, the camera including a film aperture having a length dimension along the top and bottom edges thereof in the direction of film advance and a height dimension in a transverse direction normal to said length, top and bottom film guides and lands along said top and bottom edges respectively of said aperture, and a rear cover which when closed has a first part generally adjacent said film aperture and film guides and lands, the improvement in combination therewith of an end-of-film indication means comprising an electrical ground contact located at a predetermined point in the film advance direction along said top edge of said aperture in the vicinity of said top film guide and land, this contact being covered by the top edge of any of said film in the camera having a top edge which is advanced to the same position as said predetermined point of said ground contact, an indicator pin carried by said rear cover, means for

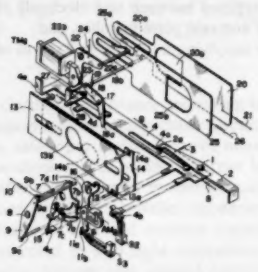
resiliantly urging said pin to move toward and touch said ground contact, circuit means including said ground contact, said indicator pin, and signal means, whereby said pin touches said contact and closes said circuit activating said signal means only when said film having a top edge is not present and covering said ground contact.

4,139,295

SAFETY DEVICE FOR AN ELECTRICALLY CONTROLLED CAMERA SLIT SHUTTER

Toshiaki Matsumoto, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1976, Ser. No. 748,162
Claims priority, application Japan, Dec. 10, 1975, 50-165752[U]
Int. Cl.² G03B 9/40
U.S. Cl. 354—246 **17 Claims**



1. A slit shutter mechanism having a leading shutter member and a trailing shutter member and controllable by an electric circuit through magnetic means which restrains said trailing shutter member at a cocked position thereof for a time period determined by said electric circuit after said leading shutter member is released, said slit shutter mechanism comprising:

a first restraining member for restraining said leading shutter member at the cocked position thereof;

a second restraining member for restraining said trailing shutter member at the cocked position thereof;

means for driving said second restraining member to release the restraint thereby and actuate said trailing shutter member, said magnetic means retaining said second restraining meber at the restraining position thereof against said means for driving during said time period;

mechanical means for holding said second restraining member against said means for driving, independently of the actuation of said magnetic means; and

an operating member movable in one direction and provided with first release means for releasing the restraint of said leading shutter member to actuate the latter and commence exposure, and further provided with means for releasing the retaining of said mechanical means and enabling said driving means to drive said second restraining member when said operating member travels a predetermined distance after the actuation of said first release means.

4,139,296

CROSS MIXER

Frederick R. Ruckdeschel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

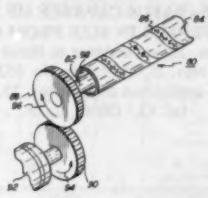
Filed Jun. 30, 1977, Ser. No. 811,810
Int. Cl.² G03G 15/09
U.S. Cl. 355—3 DD **6 Claims**

1. An apparatus for developing an electrostatic latent image recorded on a photoconductive surface, including:

means for advancing a developer mix of carrier granules and toner particles closely adjacent to the latent image so as to attract the toner particles from the carrier granules to the latent image;

means for furnishing additional toner particles to the developer mix; and

means for mixing the toner particles with the carrier granules, said mixing means comprising an inner member



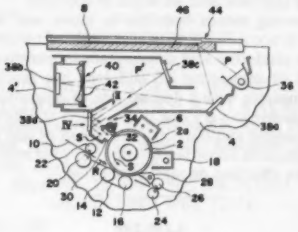
having the particles disposed thereon, an outer member positioned concentrically over the inner member and defining a space therebetween, the outer member having a helical magnetic pole pattern impressed thereon, and means for generating relative angular rotation between the inner member and the outer member to translate the developer mix disposed on the inner member.

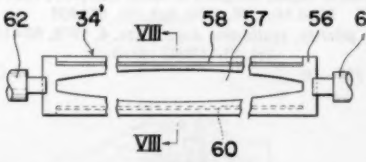
4,139,297

ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH NOVEL EXPOSURE SLIT MEANS

Masamichi Hayashi, Aichi, and Masami Nakane, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 643,951, Dec. 23, 1975, abandoned.
This application May 23, 1977, Ser. No. 799,311
Claims priority, application Japan, Jan. 13, 1975, 50-6841
Int. Cl.² G03G 15/28
U.S. Cl. 355—8 **8 Claims**





8. An electrophotographic copying apparatus of slit exposure type which comprises an optical system including a light source means for illuminating an original to be copied and means for projecting an image of the original onto a cylindrically curved member having a photoconductive surface, an exposure slit means provided along a projection path of the image for forming a slit parallel to the axis of said curved member and through which the image is projected onto said member, said exposure slit means including a wall means and a blade member adjacent said wall means said blade member

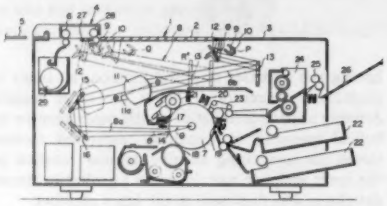
having a slit width defining portion which is narrow at its central portion and gradually broadened toward the opposite ends thereof for defining a slit with said wall means, and means for causing more light to pass said opposite ends of said blade member than at its central portion.

4,139,298

COPYING APPARATUS CAPABLE OF PRODUCING COPIES DIFFERING IN SIZE FROM ORIGINALS

Tatsuo Tani, Tokyo, Japan, assignor to Ricoh Co., Ltd., Japan

Filed Nov. 21, 1977, Ser. No. 853,818
Claims priority, application Japan, Nov. 25, 1976, 51-140678
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **7 Claims**



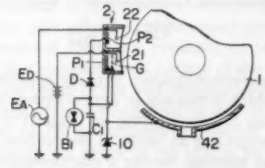
1. A copying apparatus capable of producing copies differing in size from originals comprising:
original support means;
original illuminating means;
a photosensitive element operable to have an image of an original formed thereon;
a lens for forming an image of an original on said photosensitive element;
at least one mirror reflecting light rays emerging from said lens toward said photosensitive element;
drive means for moving said lens;
converting means operable to convert the amount of movement of said lens into an angle of rotation;
mirror moving means operable to move said at least one mirror in accordance with said angle of rotation;
means for rendering said drive means inoperative when the amount of movement of said lens has reached a limit commensurate with a desired rate of magnification; and
means operable to vary one of the speed at which the original is scanned and the rotational speed of said photosensitive element in accordance with a selected rate of magnification in effecting document copying.

4,139,299

AUTO-BIAS DEVELOPING APPARATUS

Seiichi Miyakawa, Nagareyama, and Susumu Tatsumi, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Mar. 30, 1976, Ser. No. 671,835
Claims priority, application Japan, Apr. 4, 1975, 50-41589
Int. Cl.[2] G03G *15/10*
U.S. Cl. 355—10 **3 Claims**



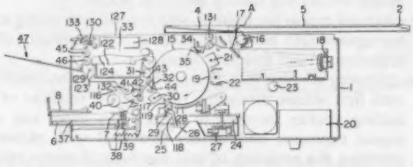
1. An auto-bias developing device for use in an electrophotographic apparatus having means including a photosensitive layer for forming an electrostatic latent image, and a d.c. discharger having an electrode spaced from said layer, said device comprising:
a developing electrode closely spaced from the outer surface of said layer and adapted so there can be induced thereon, by the counter-electrode effect, a potential proportional to the average surface potential on said layer;
means for supplying a developing solution into the space between said layer and said developing electrode so as to develop a latent image on said layer; and
means for supplying current to said developing electrode, said current supplying means including
a conductive plate member disposed opposite the electrode of said d.c. discharger,
a voltage regulating element connecting said plate member to ground,
means connecting a junction, between said plate member and said voltage regulating element, to said developing electrode,
a grid interposed between said electrode of said d.c. discharger and said plate member, and
means for supplying a control voltage to said grid.

4,139,300

COPYING APPARATUS WITH VARIABLE STOP POSITION

Hajime Katayama; Hiroshi Nitanda; Tateki Nagaoka, all of Tokyo; Hirotoshi Kishi, Higashimurayama; Yusaku Takada, Tokyo; Noriyoshi Iida, Ichikawa; Tsuneki Inuzuka, Fuchu, and Yutaka Komiya, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1975, Ser. No. 624,118
Claims priority, application Japan, Dec. 13, 1974, 49-143891; Oct. 22, 1974, 49-127795[U]
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—14 **40 Claims**

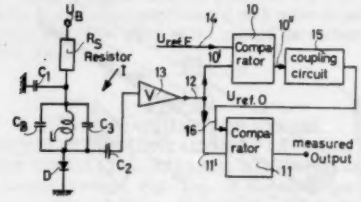


1. Image forming apparatus comprising:
a rotatable medium;
means for forming an electrostatic latent image on a surface of said rotatable medium;
means for developing the latent image into a visible image;
means for transferring the visible image from said rotatable medium to a transfer material;
means for cleaning the surface of said rotatable medium for repetitive use;
driving means for rotating said rotatable medium before and during the image forming operation; and
means for controlling said driving means to stop said rotatable medium at a different rotational position from its position before the start of rotation.

4,139,301
DISTANCE MEASURING LASER APPARATUS FOR DELAYED TIME MEASUREMENTS

Hoiko Chaborski, Munich, Fed. Rep. of Germany, assignor to Mitec-Moderne Industrietechnik GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,699
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634627
Int. Cl.[2] G01C 3/08
U.S. Cl. 356—5 2 Claims

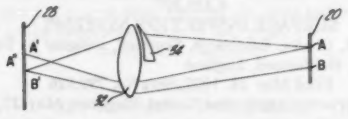


1. An input circuit for a distance measuring laser apparatus comprising channel means, input rectifier circuit means in said channel means, said input rectifier circuit means comprising light responsive diode means having a barrier layer capacity, said input rectifier circuit means further comprising working impedance means including a parallel resonance circuit comprising an inductance coil and external capacitance means operatively connected to said light responsive diode means whereby the latter triggers said parallel resonance circuit in response to a received light impulse, said input rectifier circuit means further comprising means operatively connecting said barrier layer capacity of said light responsive diode means in parallel to said parallel resonance circuit.

4,139,302
METHOD AND APPARATUS FOR INTERFEROMETRIC DEFORMATION ANALYSIS

Yau Y. Hung, and Ralph M. Grant, both of Rochester, Mich., assignors to Dr. Ralph M. Grant Engineering Consultants, Inc., Auburn Heights, Mich.

Filed Feb. 17, 1977, Ser. No. 769,422
Int. Cl.[2] G01B 11/16, 9/02, 11/00
U.S. Cl. 356—32 17 Claims

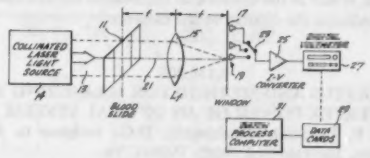


1. The method of analyzing the strain on an object resulting from the application of a stress, comprising: illuminating the object with a coherent light source; exposing a photographic media to a first pair of focused images of the object displaced with respect to one another derived by passing light reflected from the object through a converging lens having a wedge-shaped prism covering a portion of its surface; stressing the object; exposing the photographic media to a second pair of focused images of the object, displaced with respect to one another as the first pair, after stressing, derived from said lens and prism; developing the photographic media; and analyzing the resultant image of the object with a fringe-frequency filter to create an image of the object with fringe families superimposed and arrayed as a function of the strain on the object.

4,139,303
ADAPTIVE COHERENT OPTICAL PROCESSING METHOD AND APPARATUS FOR RECOGNIZING AND COUNTING OBJECTS

F. Paul Carlson, and Charles K. Lee, both of Seattle, Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Filed Jan. 21, 1977, Ser. No. 761,365
Int. Cl.[2] G01N 33/16, 15/02, 21/00
U.S. Cl. 356—39 22 Claims



1. A method of recognizing and counting randomly sized, randomly located and randomly oriented objects of a distinct geometrical shape in a mass of objects of varying geometrical shapes, said method comprising the steps of:

arraying said mass of objects in a non-overlapping field;

passing a beam of coherent light through said non-overlapping field such that said field scatters said beam of coherent light;

positioning a Fourier transform lens such that the lens collects light scattered by said non-overlapping field and forms a composite Fourier spectrum of said non-overlapping field;

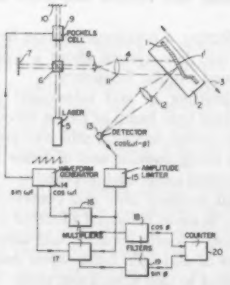
measuring the intensity of the light at selected points in said composite Fourier spectrum; and,

combining said light intensity measurements by nonuniformly weighting each light intensity measurement made by a predetermined weighting factor, B; and, summing said nonuniformly weighted light intensity measurements to provide an estimated count of the number of objects of a distinct geometrical shape located in said non-overlapping field.

4,139,304
METHODS AND APPARATUS FOR MEASURING VARIATIONS IN DISTANCE TO A SURFACE

John D. Redman, Newbury, and Michael R. Wall, Reading, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 10, 1977, Ser. No. 767,334
Int. Cl.[2] G01B 9/02, 11/24
U.S. Cl. 356—358 17 Claims



1. A method of measuring variations in distance to a surface comprising:

generating an array of projected spaced-apart sheets of light which intersect the surface;

imaging the surface thus intersected on to a photoelectric detector having a cross-sectional dimension relative to the spacing of the imaged sheets at the detector such as to produce a variation in detector output if the imaged sheets move relative to the detector;

causing the sheets which intersect the surface to shift laterally and cyclically across the surface, thereby causing the detector output to include a sinusoidal component whose phase depends on the distance to the imaged surface;

and utilising the change in phase of said sinusoidal component, if and as the distance to the imaged surface changes, to indicate the change in the distance.

4,139,305

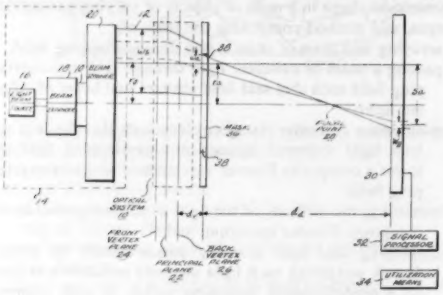
APPARATUS AND METHOD FOR MEASURING THE VERTEX POWER OF AN OPTICAL SYSTEM

Edward F. Lapornik, Washington, D.C., assignor to Acuity Systems, Incorporated, South Reston, Va.

Filed Mar. 28, 1977, Ser. No. 782,296

Int. Cl.[2] G01B *9/00*

U.S. Cl. 356—125 **11 Claims**



1. An apparatus for measuring a vertex power of a lens system having a central axis, an effective principal plane, a vertex and a focal point, comprising in combination:

means for providing a beam of parallel light rays, said beam being parallel to said central axis at a first predetermined radial distance therefrom, said beam of light impinging on said lens system, said light beam being refracted by said lens system such that said light beam virtually defines a first locus on said principal plane, and effectively passes thererfrom in a straight line through said focal point to tend to define a second locus on an intermediate plane parallel to said principal plane at a first predetermined axial distance along said central axis from said vertex, and illuminating a portion of a subsequent plane parallel to said principal plane positioned a second predetermined axial distance along said central axis from said intermediate plane;

means for effecting a rotational motion between said light beam and said lens system about a rotational axis at a predetermined angular frequency;

means for admitting to said subsequent plane only such portion of said light beam as passes through a third locus within said second locus on said intermediate plane, said third locus being annular and of lesser radial dimension than said second locus, and disposed at a second predetermined radial distance from said central axis, the portions of said light beam as refracted admitted to said subsequent plane defining a fourth locus on said subsequent plane and the portions of said light beam when unrefracted tending to be admitted to said subsequent plane, tending to define a fifth locus on said subsequent plane; and

means responsive to said light beam portions passing through said third locus for providing an indication of the difference in radial position in said subsequent plane of said fourth locus from said fifth locus, whereby said indication is representative of the vertex power of said optical system.

4,139,306

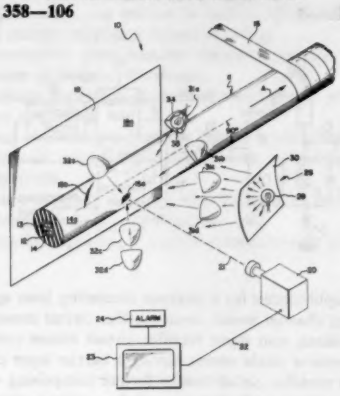
TELEVISION INSPECTION SYSTEM

James F. Norton, Alplaus, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,615

Int. Cl.[2] H04N *7/02*; G01N *21/32*

U.S. Cl. 358—106 **10 Claims**



1. A television inspection system for detecting flaws upon a surface of an object, said object surface having a known color and a known average reflectivity, comprising:

a backing member positioned to one side of said object and having a surface of substantially the same color and average reflectivity as said object;

first illumination means for directing light at least obliquely upon said object surface;

video sensor means situated upon an opposite side of said object from said backing member for converting light reflected from said object surface to a video signal;

second illumination means for diffusing light substantially perpendicular upon the portion of said object surface viewable by said video sensor means; and

means for monitoring the video signal to cause an alarm to be activated in the event that a parameter of the video signal exceeds one of a preselected set of flaw characteristics.

4,139,307

SURFACE INSPECTION SYSTEMS

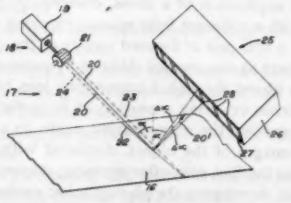
Graham M. Clarke, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed May 24, 1977, Ser. No. 799,926

Claims priority, application United Kingdom, May 27, 1976, 22088/76

Int. Cl.[2] G01N *21/30*

U.S. Cl. 356—446 **9 Claims**



1. A surface inspection system for measuring the gloss of a

surface caused to move past the system including a transmitting station from which a beam of light is directed onto the surface and caused to scan repetitively across the surface, a receiving station comprising a detector of light, an enclosure containing the detector extending across the surface and having a plurality of slits in one wall thereof by which light may reach the detector, the one wall extending so that the slits are arranged to receive light reflected at the specular angle and the slits being spaced apart such that the reflected bean enters each slit in turn to produce from the detector a succession of detector pulses each having the characteristic features of the gloss of the surface under test, and measuring means operable to measure the duration of the detector pulses at a predetermined level with respect to the amplitude of each pulse to produce a signal indicative of the gloss of the part of the surface giving rise to that pulse.

4,139,308

GLUING MACHINE FOR GLUING LIGNOCELLULOSE-CONTAINING PARTICLES USED FOR PRODUCING PRESSED WOOD PLATES

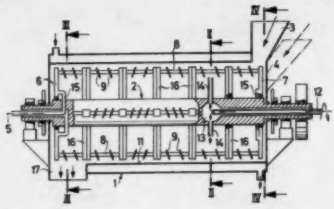
Berndt Greten, Springe, Fed. Rep. of Germany, assignor to bison-werke Bähre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 861,539

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658243

Int. Cl.² B01F *7/04, 15/02*

U.S. Cl. 366—147 **8 Claims**



1. A gluing machine for gluing lignocellulose-containing particles such as fibers, shavings, dust, and the like, for the production of pressed wood plates, comprising: a housing having on one end an intake for material to be glued, said housing having another end with an outlet for glued material; stirring means having mixing tools and being rotatable with a shaft, said stirring means being centered in said housing; said stirring means having also glue supply nozzles; said mixing tools comprising rods extending parallel to said shaft, said rods being supported on their ends on said shaft; said rods carrying spaced cross surfaces and being relatively close to an interior wall of said housing; at least some of the cross surfaces being inclined to the longitudinal axes of said rods.

4,139,309

APPARATUS AND METHOD

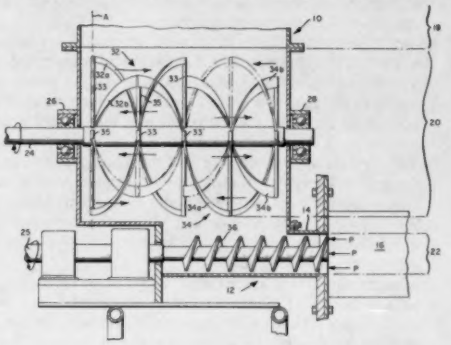
John G. S. Billingsley, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1977, Ser. No. 859,188

Int. Cl.² B01F *15/02*

U.S. Cl. 366—186 **7 Claims**

1. An apparatus for feeding thermoplastic scrap material comprising: a generally upright hopper having from top to bottom, storing, agitating and transfer zones, a material transfer conduit communicating with said transfer zone and having its outlet connected to a means for reprocessing the scrap material, said agitating zone including a first driven shaft extending across said agitating zone, means on said first shaft for mixing scrap and discharging the scrap material from the storing zone to the transfer zone at substantially zero pressure; a second separately driven shaft extending through said transfer zone into said material transfer conduit; and a spiral screw flight attached to the second shaft below said means for mixing the material and discharging the material from the storing zone, said spiral screw flight extending into said transfer conduit in close proximity to said conduit for compacting said



material at the outlet of said conduit against pressure generated in said means for reprocessing the scrap material, said transfer conduit being less than about one screw pitch length of said spiral screw flight.

4,139,310

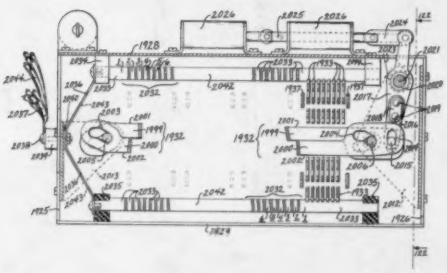
JUSTIFYING TEXT WRITING COMPOSING MACHINE

William S. Gubelmann, deceased, late of Convent, N.J., by Walter S. Gubelmann, executor, Palm Beach, Fla., and William R. Grier, New Vernon, N.J., assignors to R & I Patent Corp., Morristown, N.J.

Division of Ser. No. 213,045, Dec. 28, 1971, Pat. No. 3,993,179. This application Oct. 15, 1976, Ser. No. 733,001

Int. Cl.² B41J *5/30*

U.S. Cl. 400—4 **24 Claims**



1. A dividing and encoding apparatus comprising:

first dividing and encoding switching means comprising a number of electrically conducting first slide means, means for electrically contacting said first slide means and insulatedly supporting said first slide means for movement back and forth between a normal position and an excursion position,

dividend input means comprising amount left-in-a-line measuring means for measuring the amount left in a line, and first solenoid means responsive to said amount left-in-a-line measuring means, first means for coupling said first slide means to said first solenoid means for moving the first slide means to an excursion position,

second dividing and encoding switching means comprising second slide means arranged in a number of group assemblies, each of said group assemblies comprising a number of electrically conducting dividing and encoding slide

plates, means for insulatedly and movably supporting said dividing and encoding slide plates, whereby each of said slide plates is insulated from any other one of said slide plates and whereby each of said group of said assemblies of slide plates is movable back and forth between a normal position and an excursion position,

divisor input means comprising word space counter means, second solenoid means and third solenoid means responsive to said word space counter means, second means for coupling the second solenoid means to respective ones of said group assemblies for selecting any one of said group assemblies in response to said word space counter means, and third means for coupln g said third solenoid means to the group assemblies for moving a selected one of said group assemblies of said slide plates from its normal position to an excursion position also in response to said word space counter means, a source of current connected to said first slide means, and

output circuit means comprising a plurality of sationary contact bars and means for insulatedly supporting said contact bars which are arranged to be contacted in a code channel relationship by said slide plates in their excursion positions whereby coded output signals are produced at said output circuit means which said output signals represent an appropriate quotient and remainder.

4,139,311

DISPENSING CARTRIDGE HAVING AN IMPROVED AUTOMATIC FILLER STICK POSITIONING MECHANISM

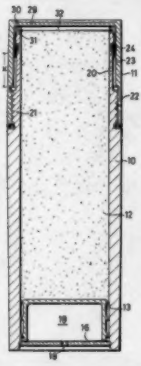
Willy Lorscheidt, Schulstrasse 12, D-5026 Dansweiler, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,494

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619441

Int. Cl.[2] B43K *21/02*

U.S. Cl. 401—55 **12 Claims**



1. In a push-up dispenser comprised of a sleeve containing a filler stick, a piston slidably arranged in said sleeve and supporting said filler stick, and a cup-shaped cover which fits over the top of said sleeve, said sleeve and said cover having coacting threaded portions, arranged on the outer surface of said sleeve and on the inner surface of said cover, the improvement which comprises:

(a) sealing means located on said sleeve below the threaded portion thereof;

(b) an extension of said cover below its threaded portion forming a threadfree sealing surface for sealing contact with said sealing means, the inner diameter of said sealing surface being greater than the outer diameter of said threaded portion on said sleeve;

(c) the length of said sealing surface on said extension is at least approximately equal to the dimension by which the filler stick is desired to project from the opening of said sleeve in the working position;

(d) said sealing means is comprised of a gasket including a base ring sealingly positioned on said sleeve and a flexible downwardly extending lip in sealing sliding contact with said sealing surface on said cover whereby said lip is pressed against said sealing surface by underpressure in the said cover created by unscrewing said cover and can lift itself from the said sealing surface in the case of overpressure under said cover;

(e) the lower surface of said piston being exposed to atmospheric pressure whereby, when said cover is removed, said pressure on said lower surface of said piston together with said underpressure in said cover will move said piston and filler stick upwardly out of said sleeve to a working position.

4,139,312

DISPOSABLE TOOTHBRUSH

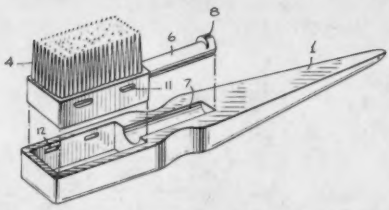
Carlos J. Marano, and Enrique Capisano, both of Venado Tuerto, Argentina, assignors to Manuel Seinhart and Norberto Esteban Seinhart, both of Buenos Aires, Argentina

Filed Sep. 29, 1976, Ser. No. 727,753

Claims priority, application Argentina, Dec. 4, 1975, 261483

Int. Cl.[2] B43K *5/06*

U.S. Cl. 401—176 **2 Claims**



1. A disposable toothbrush comprising: a handle having in one end a first cavity, a second cavity of less volume than said first cavity, a bristle holder body frictionally housed in said first cavity and formed with a cylinder extending axially of said handle and under said bristles, a port establishing communication between said cylinder and the space between said bristles to permit the passage of dentifrice from said cylinder to said space, and a plunger normally positioned in said second cavity and movable axially in said cylinder to force dentifrice from said cylinder through said port.

4,139,313

WRITING ELEMENT FOR USE IN BALL POINT PEN

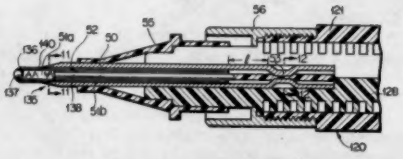
Jiro Hori, 545 Tenno-cho, Kure-shi, Hiroshima-ken, Japan

Filed Dec. 3, 1976, Ser. No. 747,209

Claims priority, application Japan, Dec. 10, 1975, 50-165725[U]

Int. Cl.[2] B43K *7/10*

U.S. Cl. 401—216 **12 Claims**



1. A writing element for use in a ball point pen having a body member comprising a ball seat member fixed relative to said body member and having a ball seat on its tip-end, a ball rotat-

ably supported on the ball seat, and an outer sleeve means surrounding said ball and having holding means keeping the ball on the ball seat of the ball seat member, the outer sleeve means being frictionally slidable relative to said body member so that writing pressure enables the outer sleeve means to move backward by the extent to which the ball seat has been abraded.

4,139,314

INSERT NUT

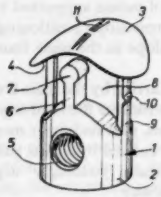
Helmut Albern, Quickborn, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,702

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 7715076[U]

Int. Cl.² F16B 7/00

U.S. Cl. 403—14 **7 Claims**



1. Fastener for releasable connection of articles, particularly furniture components, characterized in that it comprises an insert member (1) with a generally cylindrically shaped body (2) and a head (3, 13) laterally enlarged with respect to said body, said head having a lower surface (4,15) intended for abutment against the surface of the article, while the body (2) has a threaded bore (5) extending perpendicularly to its longitudinal axis, and centrally arranged, which is adapted for reception of a screw (22) said generally cylindrically shaped body (2) and said head (3, 13) are maintained in spaced relation by a web which is arranged transverse to the bore axis and connects them together, said web has a width substantially corresponding to the width of said body, said body (2) further includes rib-like extensions (6) which are disposed perpendicular with respect to the web, said extentions (6) extend from said body in the direction towards the head and are disposed on opposite sides of and connected with said web.

4,139,315

BOLTED PLATE JOINT

Jacques Lévy, Paris, and Jean-Luc Viaud, Bures sur Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

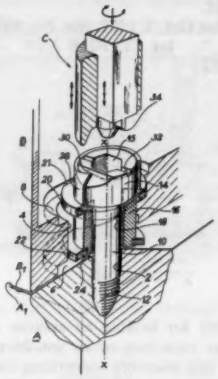
Filed Dec. 7, 1977, Ser. No. 858,343

Claims priority, application France, Dec. 15, 1976, 76 37743

Int. Cl.² F16B 5/02

U.S. Cl. 403—19 **6 Claims**

1. An assembly of two upper and lower parts respectively each having a flat assembly face, wherein the upper part has a bore provided in the vicinity of the assembly face with an orifice which is ovalized over part of its height whilst the lower part is provided with an internally-threaded bore, the two bores being coaxial when the parts are in the assembly position and wherein the assembly further comprises an assembly device constituted by a first connecting member and a second connecting member, the first member being provided with a threaded end in cooperating relation with said internally-threaded bore whilst the second member is provided with a portion in contact with one face of the upper part which is opposite to the assembly face, one member aforesaid being such as to have an ovalized portion in cooperating relation with the ovalized orifice with provision for a clearance space, one member aforesaid being such as to have a deformable portion in cooperating relation with the other member after



crimping in order to secure the two members at least against rotational motion.

4,139,316

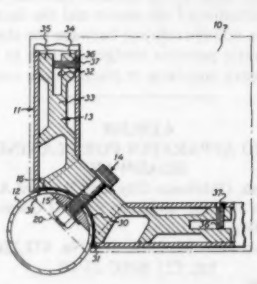
DEVICE FOR CONNECTING TWO INCLINED TUBES TO A LEG OR OTHER TUBULAR PIECE

Algot I. Svensson, Mörarp, Sweden, assignor to Formfac International AB, Arlov, Sweden

Filed Jul. 12, 1977, Ser. No. 815,038

Int. Cl.² F16B 7/00

U.S. Cl. 403—172 **2 Claims**

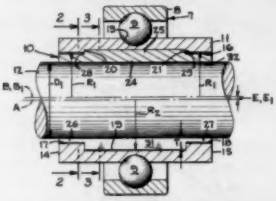


1. Means for connecting an elongated piece and two square tubes making an angle to each other and to said elongated piece, comprising a corner piece; prongs on said corner piece projecting into the ends of said square tubes and detachably anchored thereto, an open seat formed in said corner piece for laterally receiving said elongated piece; the opening in said seat being slightly smaller than the cross-section of the elongated member so that contact between said seat and the elongated member is established along narrow linear contact surfaces, clamping means for holding said elongated piece against said linear contact surfaces, obliquely cut ends on said square tubes extending over the prongs of the corner piece so as to entirely conceal the sides of said prongs and extend up to the seat formed in the corner piece, and press the square tubes against the elongated piece.

4,139,317
BEARING LOCKING ASSEMBLY

Eugene R. Hafner, Carmel, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 3, 1977, Ser. No. 839,142
Int. Cl.[2] F16B 2/18
U.S. Cl. 403—352 6 Claims

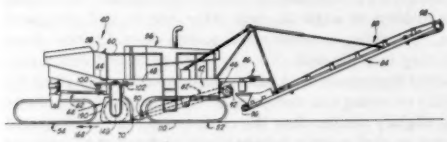


1. An assembly for locking an annular machine element, such as an inner race ring of an anti-friction bearing, to a mounting-shaft, said assembly comprising the annular machine element having a bore that includes a continuously cylindrical annular central portion concentric with the element and a pair of cylindrical end portions eccentric with the element, and a unitary split sleeve having a central cylindrical bore sized to fit with an intended mounting-shaft size, said sleeve having an external surface configuration that includes an annular cylindrical central portion concentric with the sleeve bore and a pair of cylindrical end portions eccentric with the sleeve bore, said sleeve central portion having an external cylindrical surface defined by a radius that is greater than the radii defining the external cylindrical surfaces of the eccentric end portions of the sleeve, said sleeve being sized so as to be resiliently compressible in a radial direction to enable insertion of the sleeve into the bore of the annular machine element whereupon release of the radial compressing force keys the central portion of the sleeve within the central portion of the bore to lock the sleeve longitudinally in place within the element, said sleeve eccentric end portions having external cylindrical surfaces that slidably fit within internal cylindrical surfaces of the eccentric end portions of the annular machine element bore when the eccentricities of the sleeve and the bore are aligned radially but upon relative rotation between the element and the sleeve the eccentric portions wedge together to lock the element and the sleeve angularly in place on the mounting-shaft.

4,139,318
METHOD AND APPARATUS FOR PLANING A PAVED ROADWAY

Herbert E. Jakob, Oklahoma City, and Richard A. Silbernagel, Del City, both of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Mar. 31, 1976, Ser. No. 672,326
Int. Cl.[2] E01C 23/08
U.S. Cl. 404—90 12 Claims



1. A planer apparatus for removing the top portion of an existing paved roadway to a predetermined grade established by a grade control reference, comprising in combination:

a main frame having a forward end, a rearward end, a left side and a right side;

a planer means for cutting the paved roadway along a cutting plane extending transversely to the paved roadway;

means supporting the planar means on the main frame to maintain the cutting plane parallel with the main frame;

drive means connected to the main frame for supporting and driving the main frame along the roadway;

elevation positioning means connected to the main frame and to the drive means for raising and for lowering the main frame relative to the drive means in an actuated position thereof;

elevation control means supported by the main frame and engaging the grade control reference for actuating the elevation positioning means and maintaining the elevation of the cutting plane at the predetermined grade;

cross slope positioning means connected to the main frame and to the drive means for raising and lowering one of the side of the main frame relative to the other side of the main frame in an actuated position thereof, whereby the cross slope of the cutting plane of the planer means is selectively determined;

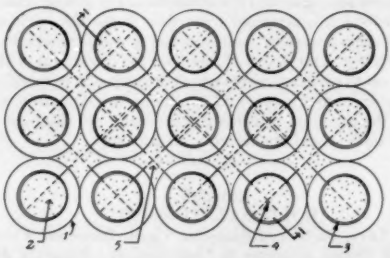
cross slope control means supported by the main frame for actuating the cross slope positioning means to maintain a selected cross slope as the main frame is driven along the roadway; and

reclaimer means carried by the main frame rearwardly of the planer means to receive the roadway material removed by the planer means, said reclaimer means including a moldboard floatinly carried by and relative to the main frame and biasing means yieldingly urging the moldboard against the roadway.

4,139,319
MOTOR VEHICLE RUBBER TIRES AND CONCRETE REVETMENT

Emmett C. Anderson, 1707 Taylor St., NW., Washington, D.C. 20011, assignor to Emmett C. Anderson, Washington, D.C.

Filed Dec. 29, 1977, Ser. No. 865,585
Int. Cl.[2] E02B 3/12
U.S. Cl. 405—16 1 Claim

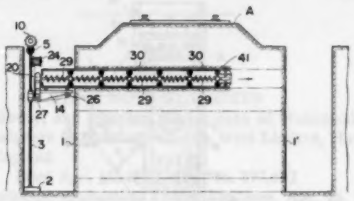


1. A flexible monolithic mat of motor vehicle rubber tires woven together with eaving reinforcing holding rods and concrete comprising; a plurality of rubber tires arranged in a horizontal plane comprised of at least four tires tangent to each other with each tire being tangent to at least two of the other tires, each tire having a concrete rim form in the area normally occupied by the steel rim when the tire is used on an automobile, each form being filled with concrete and the area bound by the plurality of tires being filled with concrete, reinforcing rods arranged in the concrete and extending between at least two of the tires, the reinforcing rods which extends between any two of the tires crossing the reinforcing rods of the other two tires, the reinforcing rods extending along a horizontal plane and being approximately midway of the concrete in the rim and passing from the body of the tire into approximately the mid portion of the concrete bound by the plurality of tires and passing from the body of the other rire of the at least two tires and into approximately the mid portion of concrete in the rim of the other tire.

4,139,320
PROCESS FOR EXCAVATING AND CONSTRUCTING TUNNEL AND EXCAVATING DEVICE

Toshiyuki Ueno, Funabashi; Isamu Itoh, Tokyo, and Yasuyuki Morita, Mitaka, all of Japan, assignors to Japanese National Railways; Kyokuto Boeki Kaisha Ltd. and Ishikawajima-Harima Jukogyo Kabushi Kaisha, all of Tokyo, Japan

Filed Aug. 15, 1977, Ser. No. 824,614
Claims priority, application Japan, Aug. 20, 1976, 51-098665
Int. Cl.[2] E01G *3/00*; E21D *9/04*
U.S. Cl. 405—138 1 Claim



1. A process for excavating and constructing a tunnel, comprising the steps of:

providing a plurality of box-shaped hollow casing units having shapes which conform to imaginary segments obtained by dividing the imaginary peripheral portion of a tunnel to be constructed, in both the longitudinal and transverse direction of said tunnel;

attaching an excavator allowing an excavating operation in conformity with the section of said casing units to the forward end of one of said box-shaped, hollow casing units;

advancing said excavator through the ground a given distance;

coupling a succeeding casing unit to the preceding casing unit and removing sand and soil from within the casing units;

repeating the above cycle of the operation until said excavator arrives at the other end of the tunnel to be constructed, thereby forming one run of casing units;

providing another run of casing units adjacent to said one run of casing units and rigidly adjoining the side wall surfaces of the adjacent runs;

repeating the above operation until the outer wall of a tunnel is formed by a plurality of adjoined runs of casing units;

excavating and removing sand and soil surrounded by said outer wall of a tunnel;

placing reinforcing means along the inner surface of said outer wall and a mold inwards of said steel bars;

pouring concrete into a space defined between the inner surface of said outer wall consisting of a plurality of runs of casing units, and the outer surface of said mold, and in said casing units, themselves; and

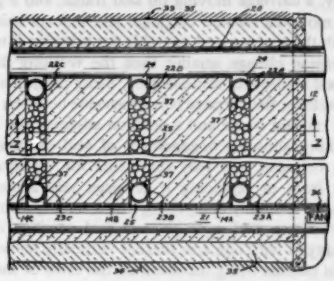
removing said mold.

4,139,321
ROCK CHANNEL HEAT STORAGE

Frank D. Werner, Box SR9, Jackson, Wyo. 83001

Division of Ser. No. 579,492, May 21, 1975, Pat. No. 4,024,910.
This application Jan. 31, 1977, Ser. No. 764,511
Int. Cl.[2] F16L *1/00*
U.S. Cl. 405—154 5 Claims

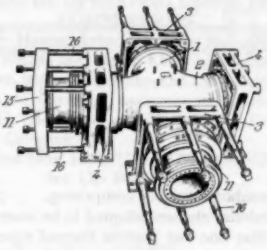
1. The method of forming a heat or cold storage arrangement comprising the steps of forming at least one channel between earth material layers, said channel being substantially upright and having an upright dimension substantially greater than its horizontal width and having a preselected length, placing perforated fluid carrying ducts which substantially span the horizontal width of the channel at spaced locations in said channel, filling said channel between said ducts with a material comprising discrete solid particles having substantial interstitial spaces, and connecting said ducts to means to circulate fluid from one duct to the other through the interstitial spaces.

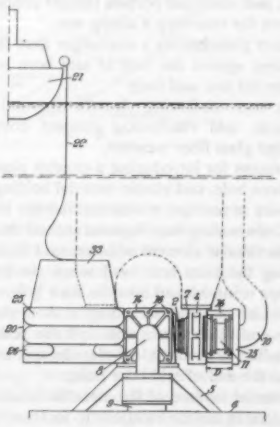


4,139,322
EQUIPMENT FOR REMOVING AND REFITTING RESILIENT PACKING IN A CARDAN JOINT

Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipments Mecaniques et Hydrauliques E.M.H., Boulogne, France

Filed Jun. 6, 1977, Ser. No. 803,855
Claims priority, application France, Jun. 11, 1976, 76-17779
Int. Cl.[2] F16L *1/00*
U.S. Cl. 405—169 13 Claims





1. Equipment for removing and replacing a resilient packing compressed between two abutments under water, particularly resilient packings on articulated columns on the seabed, said

equipment comprising a submersible assembly including a frame, means on said frame for adjusting the buoyancy of the assembly, a carriage moving on said frame, and a plurality of pincers mounted on said carriage, said pincers being engageable with the packing and operable for bringing it temporarily to dimension change smaller than the working distance between said abutments, said assembly being positionable in front of the packing, the carriage being movable between a retracted position on said frame and a position adjacent the location of the packing allowing engagement of said pincers with said packing between said two abutments for withdrawing said packing from or replacing it between said abutments, said submersible assembly comprising a tank having a compartment accommodating said carriage, and said carriage including a fork arranged with one arm thereof vertically above the other arm, said pincers being mounted on the arms of the fork.

4,139,323

ROCK ANCHOR

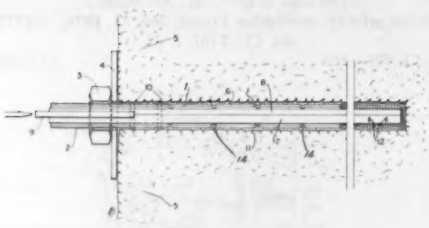
Friedrich P. Brandstetter, Salzburg, Austria, assignor to Gebirgssicherung - Ges.m.b.H., Salzburg, Austria

Filed Mar. 21, 1977, Ser. No. 779,897

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624559

Int. Cl.[2] E21D *21/00*

U.S. Cl. 405—260 **17 Claims**



1. A rock anchor assembly comprising:

a metallic tubular element adapted to be inserted into a bore hole so that one end portion thereof extends a distance from the closed end of the bore hole and the other end portion thereof extends from the opening of said bore hole, said other end portion thereof containing a threaded section for receiving a clamp nut;

an anchor plate having a size larger than the bore hole and abutting against the face of said bore hole between the clamp nut and said face;

at least one reinforcing element disposed in said tubular element, said reinforcing element comprising a resin bonded glass fiber member;

filling means for introducing a curable plastic material into the bore hole, said plastic material holding the reinforcing element in position within said tubular element;

at least one sealing ring disposed around the external surface of the tubular element adjacent said threaded section for sealing the bore hole wall when the head of the rock anchor is introduced into the bore hole;

said tubular element extending a short distance from the open end of the bore hole and the reinforcing member extending beyond said tubular element into close proximity to the end of said bore hole;

said external surface of the metallic tubular member being indented in certain locations to increase the static friction between said metallic tubular member and said plastic material filled therein; and

a sheath surrounding the tubular element and a portion of the reinforcing element, said sheath being positioned within the borehole.

4,139,324

BRACING SYSTEM GLIDE SHOE FOR TRENCH SHEETING EQUIPMENT

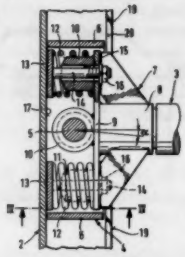
Josef Krings, Hans-Boeckler Str. 23, D-5138 Heinsberg-Oberbruch, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 858,074

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702750

Int. Cl.[2] E21D *5/00*

U.S. Cl. 405—282 **14 Claims**



1. A glide shoe and guide member assembly for use in trench sheeting equipment and the like for positioning an end of a bracing member, said guide member being of a generally U-shaped cross-section and including a bearing wall and a longitudinally extending opening remote from said bearing wall, said glide shoe including a generally rectangular outline frame positioned within said guide member for guided sliding movement, an end piece for a bracing member extending from said frame through said opening, and a pivot pin pivotally connecting said end piece to said frame, said assembly being characterized by said end piece including a bearing plate, bearing blocks extending from said bearing plate toward said bearing wall on opposite sides of said pivot pin, at least one glide plate slidably engaging said bearing wall, a compression spring associated with each bearing block and resiliently urging said glide plate against said bearing wall, and said bearing blocks having ends remote from said bearing plate spaced from said glide plate a selected distance for limiting pivoting of said bearing plate relative to said frame to a predetermined angle.

4,139,325

MINE ROOF SUPPORTS

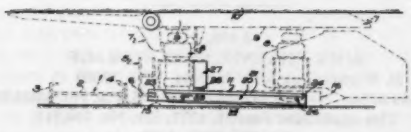
Lewis R. Bower, and Malcolm Wake, both of Horbury, England, assignors to Fletcher Sutcliffe Wild Limited, Horbury, England

Filed Jun. 20, 1978, Ser. No. 917,405

Claims priority, application United Kingdom, Nov. 1, 1977, 45376/77

Int. Cl.[2] E21D *15/44*

U.S. Cl. 405—291 **10 Claims**



1. A mining installation comprising an armoured conveyor made up of a plurality of pans articulated together end-to-end, a plurality of hydraulically powered, self-advancing mine roof supports located side by side along a goaf side of said conveyor, one or more double-acting advancing rams connecting each roof support to one of said pans, each of said roof supports having a base means, a pair of spaced apart, elongate base members being incorporated in said base means and seating on a mine floor, each of said supports having a forward end in-

tended to be located, in use, adjacent said goaf side of said conveyor and a rearward end intended to be remote from said conveyor, a rail located between said spaced apart base members and attached at a forward end thereof to one of said pans of said conveyor, and a lifting jack carried by said base members at or near said front end thereof and operable on said rail to lift said front ends of said base members from said mine floor and in this condition be advanced towards said conveyor by operation of said one or more double-acting advancing rams.

4,139,326

MINE ROOF SUPPORTS

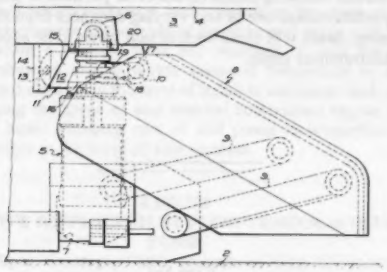
Lewis R. Bower, and Malcolm Wake, both of Wakefield, England, assignors to Fletcher Sutcliffe Wild Limited, Horbury Yorks, England

Filed Apr. 18, 1978, Ser. No. 897,632

Claims priority, application United Kingdom, Apr. 26, 1977, 17442/77

Int. Cl.² E21D *15/44*

U.S. Cl. 405—292 **14 Claims**



1. A mine roof support comprising at least one roof beam, at least one base member, a plurality of hydraulically extensible chock legs articulated at upper ends thereof to said roof beam and at lower ends thereof to said base member, a shield pivotally connected to a rearward part of said base member and also pivotally connected to a rearward part of said roof beam, with a permanently loaded force applying means reacting via said shield on to said roof beam, in such a manner that said force applying means resists displacement of said roof beam and, upon a sufficient fall in hydraulic pressure in said chock legs, restores any displaced chock legs to a predetermined position.

4,139,327

ROUGHING GEAR SHAPER CUTTER

Ronald J. Kuehl, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Jun. 16, 1977, Ser. No. 807,087

Int. Cl.² B26D *1/12*

U.S. Cl. 407—28 **6 Claims**

1. A roughing gear shaper cutter for generating from a blank by relative synchronized axial reciprocation and rotation a rough shape having a plurality of alternating heavy and light sections to be removed in a subsequent finishing operation, said cutter comprising a body having an axis of reciprocation, a cutting face on one axial end of said body, sides on the body intersecting said cutting face to form a cutting edge, said sides relieved behind the cutting edge to provide cutting clearance and characterized by each cutting edge formed by successive axial translations of said cutting face comprising a plurality of undulations adapted to generate the alternating heavy and light

sections on said rough shape, wherein said plurality of undulations comprises a series of continuous involute curves.

4,139,328

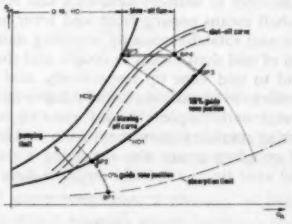
METHOD OF OPERATING LARGE TURBO COMPRESSORS

Klaus D. Kuper, Hamminkeln-Mehrhoog; Rolf Albers, Bottrop; Hans-Peter Hillebrand, Essen-Kettwig; Wolfgang Hofmeister; Kurt Ewe, both of Karlsruhe, and Luigi Tuis, Bochum, all of Fed. Rep. of Germany, assignors to Gutehoffnungshitte Sterkrade AG, Oberhauser and Siemens AG, Berlin, both of, Fed. Rep. of Germany

Filed May 25, 1977, Ser. No. 800,302

Int. Cl.² F04D *27/00*

U.S. Cl. 415—1 **6 Claims**



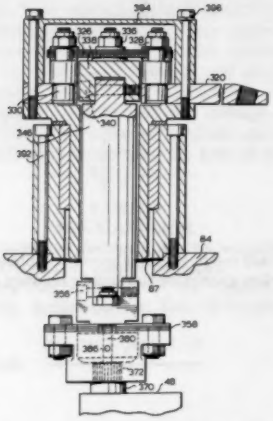
1. A method of operating turbo compressors, particularly large blast furnace compressors, wherein (rate of) flow and discharge pressure are measured continuously, and wherein, in order to prevent pumping surges from occuring, i.e. prior to reaching the pumping limit, it is ensured by the opening of blow-off valves upon reaching a blowing-off line or curve extending in parallel to said pumping limit, that the compressor flow is prevented from falling below a minimum value depending on the discharge pressure, characterized by non-linearly amplifying the control difference of the pumping limit controller for adjusting the blow-off valves and being dependent on the actual values of pressure and flow, in such a manner that the amplification (factor) or gain is increased if the control difference goes to the negative, i.e. if the operating point of the compressor shifts into the non-permissible range beyond the blowing-off line or curve.

4,139,329

VANE TIP MOTION TRANSFER DEVICE

John Korta, Stoney Creek, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

Filed May 16, 1977, Ser. No. 797,121
Int. Cl.[2] F01D *17/16, 1/04, 9/04*
U.S. Cl. 415—161 2 Claims



1. A gas turbine engine having a series of rotatable trailing vane tip members which are suitably connected through the casing of said gas turbine to a series of intermediate motion transferring devices mounted on the exterior of said casing, each of said motion transferring devices being provided with a rotatable lever arm which is connected to a master position control device by a suitable link, each intermediate motion transferring device comprising a cylindraceous body which is sealedly mounted on the casing of said gas turbine, a second cylindraceous member sealedly journalled in said body so as to be rotatable in said body, said second member having an annular flange integrally formed at one end thereof, seal means between said flange and said body to prevent the escape of hot gasses therefrom, a hollow cap member combining with said second member to sealedly sandwich said lever arm therebetween, shaft means passing from said lever arm through said device to said rotatable vane tip, coupling means connected to each end of said shaft means to couple said shaft means to said lever and to said vane tip respectively, said coupling means being resilient to permit substantial relative radial movement of said device with respect to said vane tip while accurately transmitting rotational movement from said lever to said vane tip, said coupling means also supplying a small bias force to urge said vane tip in a radially outward direction.

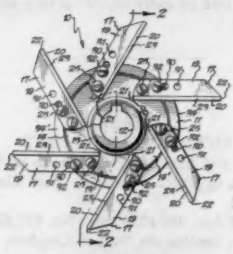
4,139,330

ADJUSTABLE VANE CENTRIFUGAL PUMP IMPELLER CONSTRUCTION

Maynard J. Neal, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,472
Int. Cl.[2] F04D *29/24*
U.S. Cl. 416—87 11 Claims

1. An adjustable centrifugal impeller comprising a hub, a plurality of elongated vanes located circumferentially on said hub with each of said vanes having inner and outer portions, first fastening means extending between said inner portions of said vanes and said hub for fastening said inner portions to said hub, second fastening means extending between said outer portions of each of said vanes and said hub and movable in a longitudinal direction relative to said vanes for engaging said outer portions of said vanes at varying distances from said first fastening means for fastening said outer portions to said hub in a plurality of different angular positions of said vanes, said hub including an inner portion having an outer circumferential surface and an outer annular portion which is movable relative thereto in a circumferential direction to different circumferential positions, said first fastening means extending between said inner portion of said hub and said inner portions of said vanes, said second fastening means extending between said outer



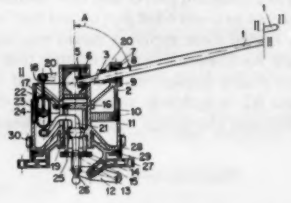
annular portion of said hub and said outer portions of said vanes, whereby both the relative circumferential movement of said inner and outer hub portions and the fastening of each of said second fastening means on the outer portions of said vanes at a predetermined one of said varying distances from said first fastening means will cause each of said vanes to be adjusted to a predetermined angle.

4,139,331

ROTOR FOR A HELICOPTER

Mario Girodin, La Fontaine Pleureuse, Bazemont, France (78)

Filed Dec. 9, 1976, Ser. No. 749,103
Int. Cl.[2] B64C *27/72*
U.S. Cl. 416—114 7 Claims

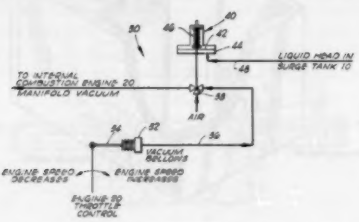


1. A rotor for a helicopter including a plurality of rotor blades, a rotor boss and a rotor hub disposed within said boss, said hub and said boss having a common axis of rotation, each blade having an integral spindle extension, an articulated joint between each spindle extension and the rotor boss, a further articulated joint between each spindle extension and said hub, each spindle extension having a longitudinal axis, the longitudinal axes of said spindle extensions intersecting at the common axis of rotation of the rotor boss and hub, each spindle extension being rotatable about its longitudinal axis, and control means arranged to vary the inclination of said blades by adjusting the angle said spindle extensions make with said common axis of rotation, said angle always being less than $\pi/2$, said control means comprising pilot-operated linkage means connected to said boss for lifting and lowering said boss relative to said hub.

4,139,332
PUMPING RATE CONTROL METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE DRIVEN PUMPS

Steven M. Cantrell, 2216 E. 18th St., Ada, Okla. 74820, and Sydney J. Keasler, 16214 Sinapore, Houston, Tex. 77040

Filed Mar. 22, 1977, Ser. No. 780,036
Int. Cl.[2] F04B 49/00
U.S. Cl. 417—34 5 Claims



1. A method of controlling the liquid pumping rate of an internal combustion engine driven pump taking suction from a surge tank whereby a substantially constant level of liquid is maintained within said surge tank comprising the steps of:

sensing changes in the level of liquid in said surge tank;

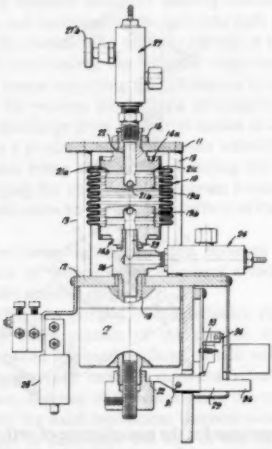
producing a vacuum from the manifold of said internal combustion engine which varies in proportion to said sensed changes in the level of liquid in said surge tank; and

changing the speed of said internal combustion engine and the liquid pumping rate of said pump in proportion to changes in the level of said vacuum.

4,139,333
POSITIVE DISPLACEMENT FLOW THROUGH FLUID PUMP

Laszlo Sipos, Saratoga, Calif., assignor to GCA Corporation, Sunnyvale, Calif.

Filed May 18, 1977, Ser. No. 798,024
Int. Cl.[2] F04B 21/00, 39/00, 43/08, 15/00
U.S. Cl. 417—63 7 Claims



1. A positive displacement flow through fluid pump comprising: a substantially cylindrical bellows having caps at both ends and both of said caps including a plug extending and displacing a substantial volume within said cylindrical bellows said plugs having juxtaposed portions for limiting said reciprocation of said bellows when such portions contact each other, said caps having inlet and outlet ports for the fluid to be pumped, both of said plugs including fluid flow channels perpendicular to the axis of said bellows connected to said inlet and outlet ports; and means for reciprocating said bellows for dispensing exact volumes of said fluid.

4,139,334
CABLE STRING FOR DOWNHOLE PUMPS

Bobby L. Payne, and Hilary H. Iglehard, both of 5012 Andrews Hwy., Odessa, Tex. 79762

Filed Feb. 28, 1977, Ser. No. 772,465
Int. Cl.[2] F04B 21/04; F16J 15/18; F21B 27/00
U.S. Cl. 417—545 8 Claims

1. In an oilwell having a borehole within which a downhole pump is positioned, a pump jack located on the surface of the ground, and a sucker rod string extending downhole through the borehole by which the pump jack reciprocates the pump, the improvement comprising:

said sucker rod string comprising a plurality of individual joints of multi-strand material, means forming a pin member at each end of each said joint such that the terminal end of each said joint of multi-strand material is affixed to one said pin member;

a coupling member having a box member at each end thereof which threadedly engages a pin member of adjacent joints so that the joints can be series connected to provide a rod string of sufficient length to extend from proximity of the pump jack into proximity of the pump; the length of each said joint is at least ten feet and no more than twelve and one half feet;

said coupling member is of a diameter which is at least twice the diameter of said multi-strand material, and having a length which is substantially greater than said diameter so that the outer periphery of said coupling member forms a wearing surface which prevents the multi-strand material from wearing against the inside peripheral surface of the wellbore.

4,139,335

ROTARY FLUID DISPLACING APPARATUS OPERABLE AS PUMP OR MOTOR

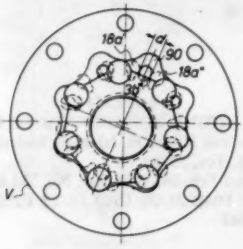
Peter Wüsthof, Lohr, and Johann Schneider, Lohr-Wombach, both of Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,337

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614471

Int. Cl.[2] F04C *29/08*

U.S. Cl. 418—61 B 8 Claims



2. A rotary fluid displacing apparatus operable as pump or motor comprising housing means; a fluid displacing unit within said housing means comprising an annular stator stationarily mounted in said housing means and having a plurality of radially inwardly extending teeth and a rotor within said stator and having radially outwardly extending teeth meshing with said teeth of the stator, said rotor having one tooth less than said stator; a machine shaft mounted in said housing means for rotation about a fixed axis and having an end portion projecting beyond said housing means; a universal joint shaft connected at opposite ends respectively to said machine shaft and said rotor for rotation therewith and tiltable relative thereto; fluid flow control means comprising a stationary control plate and a rotary control disc both formed with central openings therethrough and both located between said machine shaft and said displacing unit, said universal joint shaft extending through the central openings in said control plate and said control disc, said control disc being provided with a plurality of control openings therethrough uniformly displaced in circumferential direction from each other and said control plate being provided with a plurality of control passages therethrough uniformly displaced in circumferential direction and cooperating with said control openings during rotation of said control disc relative to said control plate, said control openings extending in radial direction further than said control passages through a distance which corresponds to the eccentric displacement of the control disc with respect to the control plate, said control openings having lateral faces and the distance between adjacent lateral faces of adjacent control openings corresponding at least to the width in circumferential direction of the control passages.

4,139,336

EXPANSIBLE CHAMBER APPARATUS WITH PAIRS OF CYLINDRICAL ROLLERS

Walter M. Hopkins, 1306 W. Glenoaks Blvd., Glendale, Calif. 91201

Filed Jul. 18, 1977, Ser. No. 816,320

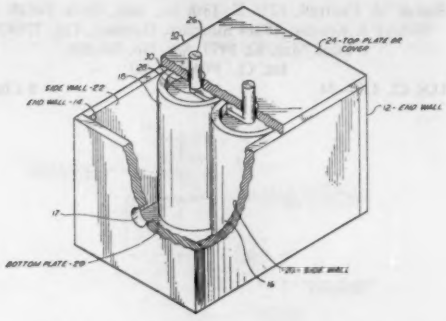
Int. Cl.[2] F01C *1/00, 19/08, 21/08*

U.S. Cl. 418—142 37 Claims

1. An apparatus having an alternately expanding and contracting chamber comprising:

at least one pair of cylindrical rollers each having an exterior surface in continuous rolling engagement with the surface of the other roller of said pair, said rollers being rotatable along parallel axes;

said chamber having defined between first and second parallel side walls, at least one end wall spaced from said rollers and top and bottom plates;



said rollers being in continuous rolling contact with said side walls, and in end sealing relationship with said top and bottom plates.

4,139,337

APPARATUS FOR THE MANUFACTURE OF ORTHOPEDIC INSOLES

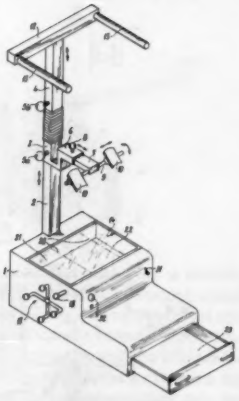
Loic David, 38690 Le Grand Lemps, Chemin des Prairies, Isere, and Peter Handlbauer, 2 bis, rue des Poilus, Nice-Villeneuve Loubet, both of France

Filed Dec. 22, 1977, Ser. No. 863,411

Claims priority, application France, Dec. 23, 1976, 76 39351

Int. Cl.[2] B29D *31/00;* B29C *17/00*

U.S. Cl. 425—2 6 Claims



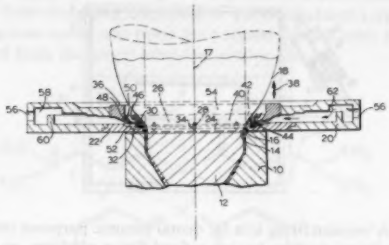
1. An apparatus for the manufacture of orthopedic insoles of thermoplastic material, comprising in combination a podoscope for the examination of the bottom face of the foot, first locating means for marking the position of the foot on the podoscope, means for the molding of a sole of thermoplastic material on one bearing surface replacing the podoscope and second locating means on said bearing surface corresponding to said first locating means for the positioning of the foot.

4,139,338

AIR RING FOR THE PRODUCTION OF BLOWN FILM

Robert J. Cole, 224 St. George St., #501, Toronto, Ontario, Canada (M5R 2N9)

Continuation-in-part of Ser. No. 747,945, Dec. 6, 1976, abandoned. This application Jan. 24, 1978, Ser. No. 872,009
Int. Cl.[2] B29C *25/00*; B29D *7/20*
U.S. Cl. 425—72 R 12 Claims



1. Air ring means for supplying a cylindrical stream of cooling air to the exterior surface of a cylindrical tube of extruded and expanded plastic film-forming material in combination with,

extrusion means of the kind including a die having spaced concentric circular die lips between which said tube is extruded along a tube path having a longitudinal extrusion axis,

means for supplying air through the die to the interior of the extruded tube for radially-outward expansion thereof, and

means for supplying a predetermined quantity of cooling air to the air ring means,

the air ring means having extending therethrough tube passage means through which the said tube path passes,

the air ring means comprising a hollow body having in its interior air receiving passage means having air inlet means thereto and air outlet means therefrom,

said air ring body including a deflector ring member and a control ring member mounted thereby concentric with one another and surrounding the said tube path concentric therewith, the control ring member having at least a portion thereof surrounding the deflector ring member,

the air supply means supplying the cooling air to the air ring inlet means for passage through the air-receiving passage means and discharge from the outlet means as a stream of greater than a predetermined minimum velocity,

the outlet means being circular, surrounding the tube path, and discharging the cylindrical air stream around the tube path for application to the exterior surface of the extruded tube,

the said outlet means being provided between a radially outer portion of the deflector ring and a radially-inner portion of the control ring,

the said radially-outer portion of the deflector ring and the said radially inner portion of the control ring having respective spaced opposed surfaces, which surfaces both extend progressively radially outward relative to the extrusion axis, and one of the rings being mounted by the air ring body for axial movement thereon parallel to the extrusion axis to determine the size of the outlet means formed between the said opposed surfaces, and

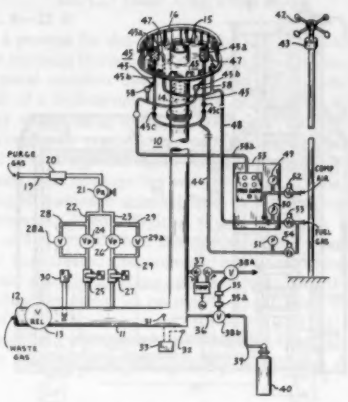
said air outlet means discharging the cylindrical air stream in a direction having a component radially outward from the extrusion axis and with a velocity creating a force that urges the extruded tube radially outwards towards the stream whereby the stream flows over the tube exterior surface for the said cooling of the material thereof.

4,139,339

FLARE GAS STACK WITH PURGE CONTROL

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Jenkintown, Pa.

Filed Feb. 17, 1977, Ser. No. 769,709
Int. Cl.[2] F23D *13/20*
U.S. Cl. 431—202 20 Claims



1. Control apparatus for a flare gas stack which comprises in combination with a flare gas stack

a connection to said stack from a supply of waste combustible gas for combustion at the discharge end of the stack,

a connection to said stack from a supply of purge gas for controlled delivery of purge gas to said stack,

a gas pilot burner for igniting of gas at the discharge end of the stack, and

means for controlling the operation of said pilot burner,

said means including a flow sensor for said stack for preventing activation of said pilot burner when no gas flow in said stack is sensed by said flow sensor.

4,139,340

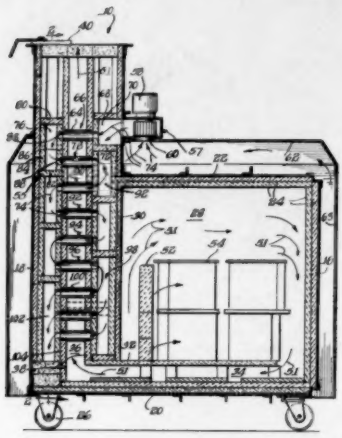
KILN HEAT EXCHANGER

Marvin Bartel, 1708 Lincolnway East, Goshen, Ind. 46526

Filed Jul. 14, 1977, Ser. No. 815,592
Int. Cl.[2] F27D *17/00*
U.S. Cl. 432—179 9 Claims

1. A pottery kiln comprising a firing chamber, a combustion chamber including fuel supply means and air supply means and connected with said firing chamber for providing flame thereto, first means comprising flue means having a hot end thereof communicating with said firing chamber and a cool end communicating with outside air for providing a draft to said firing chamber and for carrying exhaust therefrom, and second means comprising air passageway means in thermal contact with said flue means for heating air in said passageway means, said passageway means including air inlet means adjacent said cool end of said flue means and air outlet means adjacent said hot end of said flue means, said air outlet means comprising said air supply means for said combustion chamber, blower means for moving air through said passageway from said air inlet means to said air outlet means for providing heated air to said combustion chamber to facilitate combustion with said fuel therein and for confining mixing and combustion of said air with fuel to said combustion chamber and wherein one of first and second means includes an elongate substantially

vertical chamber and the other of said first and second means includes a plurality of tubular members extending substantially horizontally across said chamber at vertically spaced intervals along its vertical length and means interconnecting vertically



adjacent ones of said tubular members for hearing said air substantially in stages as it passes in thermal contact with said flue means from said cool end to said hot end of said flue means.

4,139,341

FIRING KILN, ESPECIALLY A VACUUM FIRING KILN FOR DENTAL CERAMIC PURPOSES

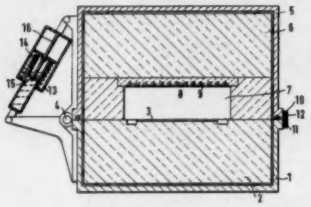
Ludwig Pfaffenbauer, Gschwandt, Austria, assignor to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed Jul. 20, 1976, Ser. No. 707,131

Claims priority, application Austria, Jul. 31, 1975, 5970/75

Int. Cl.[2] F27B *17/00, 5/04*

U.S. Cl. 432—184 **12 Claims**



1. A vacuum firing kiln for dental ceramic purposes comprising a lower portion having a fixed firing platform, an upper portion hingedly connected to and raisable arcuately from said lower portion and in abutting relationship therewith, said upper portion comprising a hollow firing chamber in facing relationship to said fixed firing platform, said firing chamber comprising means for emitting heat into said chamber and toward said fixed firing platform, the surface of said fixed firing platform being at or above the level of the upper edge of said lower portion, only said upper portion containing means for emitting heat into said chamber, said kiln being provided with means for production, maintenance and interruption of vacuum, and with means retarding the upswinging movement of said upper portion.

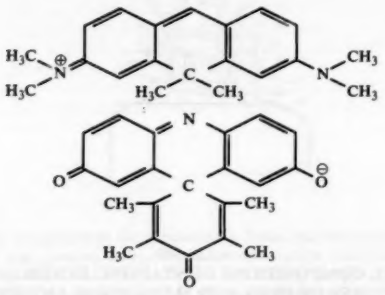
4,139,342

DYE IMPREGNATED PLASTICS FOR LASER APPLICATIONS

Stephen J. Sheldrake, Redondo Beach, and Harry H. L. Wang, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 18, 1977, Ser. No. 816,619
Int. Cl.[2] D06P *3/00, 5/00;* H01S *3/00*
U.S. Cl. 8—4 8 Claims

1. A dye impregnated plastic laser medium capable of lasing at frequencies above 0.65 μm, comprised of a solid resin selected from the group consisting of polymethylmethacrylate, polystyrene, epoxy and polyester polymers doped with a dye selected from the group whose structures are:



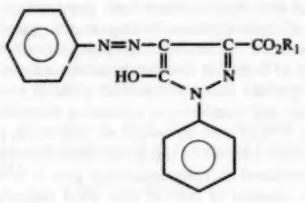
4,139,343

HEAT TRANSFER INK, SHEET, PROCESS AND PRINTED FABRIC

Russell I. Steiner, Reading, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,116
Int. Cl.[2] D06P *1/04, 5/00;* C09D *11/02;* C09B *29/38*
U.S. Cl. 8—2.5 A 9 Claims

1. A transfer sheet comprising a flexible nontextile substrate in sheet, roll or web form having a pattern effect printed thereon with a film of a dried ink formulation adapted for use in the heat transfer printing of synthetic textiles, said ink film containing one or more compatible sublimable dyestuffs, one of which is a yellow pyrazolone dye having the structure



R_1 represents lower alkyl.

6. In a process for heat transfer printing nylon, polyester or acrylic textiles and fabrics, the improvement comprising heat transferring a yellow pyrazolone dye from a transfer sheet according to claim 1 to the nylon, polyester or acrylic fibers of the textile or fabric.

4,139,344

PROCESS FOR THE CONTINUOUS DYEING OF WOOL

Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1977, Ser. No. 823,154
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2635991
Int. Cl.[2] D06P *3/82;* C09B *45/00*
U.S. Cl. 8—21 R 4 Claims

1. In a process for the dyeing of flat textile articles made of wool or mixtures thereof with synthetic fibres, by means of 1:2 or 1:1 metal complex dyestuffs or reactive dyestuffs, in the presence of a hydrotropic substance, and fixation of the dyestuffs by means of a dwelling operation, the improvement which comprises: continuously padding a web of said textile material with an aqueous liquor containing a solution of at least one of said dyestuffs together with 80 to 120 g/l of a dissolved hydrotropic substance selected from the group consisting of urea, thiourea, a polyalkylene glycol having a molecular weight of 400 to 1000 and dimethylsulphoxide; bringing the material thus treated continuously and without intermediate drying into a heated dwelling chamber; submitting the material in said chamber during its passage in a cuttled-up state to the action of heat at a temperature of from 85° to 95° C. for 30 to 60 minutes; and continuously withdrawing the dyed material from the dwelling chamber.

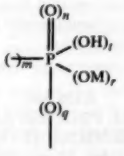
4,139,345

DYEING PROCESS AND COMPOSITIONS FOR USE THEREIN

Allen Crabtree; William J. Marshall, and David W. Plant, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 20, 1976, Ser. No. 716,286
Claims priority, application United Kingdom, Sep. 9, 1975, 37069/75
Int. Cl.[2] D06P *1/642*
U.S. Cl. 8—25 11 Claims

1. A process for the colouration of a hydroxy substituted organic polymeric substrate by heating it to at least 93° C. with a water-soluble dyestuff containing one or more groups of the formula:



where
M is a metal
n is 0 or 1
q is 0 or 1
m is 0, 1 or 2
r = 1 or 2
t = 0 or 1
and r+t is not greater than 2 and when n = 1, m+t+r+q is not greater than 3, together with a carbodiimide and a salt of ammonia or a volatile amine.

4,139,346

NUCLEIC ACID AND PROTEIN BINDING PAPER

Elazar S. Rabbani, New York, N.Y., assignor to Enzo Bio Chem Incorporated, New York, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,330
Int. Cl.[2] G01N *31/22, 33/16*
U.S. Cl. 422—56 14 Claims

1. A modified cellulosic paper comprising a sheet or continu-

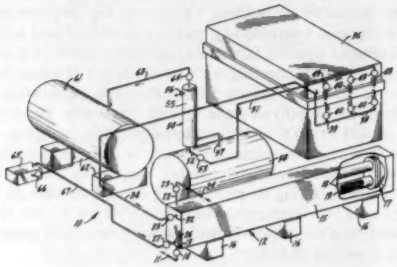
ous web of cellulosic fibers substituted with meta-aminobenzyloxymethyl groups, said modified paper adapted to be activated by diazotization for covalent binding thereto of nucleic acid residues, proteins or mixtures thereof.

4,139,347

METHOD FOR COOLING MOLTEN SULPHUR

Samuel Y. Tse, Calgary, Canada, assignor to Procor Limited, Oakville, Canada

Filed Jan. 3, 1977, Ser. No. 756,302
Int. Cl.[2] B01J *1/00*; F28F *13/00*
U.S. Cl. 23—293 S **4 Claims**



2. A method of controlling the amount of heat removed from molten sulphur flowing through a heat exchanger so that the temperature of the molten sulphur can be lowered to within less than 15° F. above its solidification point without solidifying so much sulphur that flow through said heat exchanger is blocked, comprising the steps of:

(a) flowing a heat exchanging fluid through the inside of a heat exchanger conduit;

(b) flowing said molten sulphur over the outside of said conduit; and

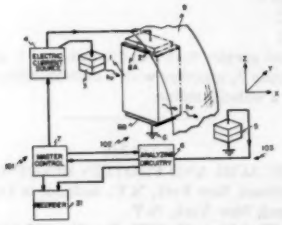
(c) regulating the temperature of said fluid at a level below said solidification point whereby when said fluid flows through said conduit a minor amount of said molten sulphur solidifies as an insulating coating on only a final portion of the outside of said conduit, the length of said sulphur coating being extended or being melted away as the heat transfer load on said heat exchanger varies, and said coating reducing heat transfer substantially as sulphur flows over said final portion.

4,139,348

ELECTROCHEMICAL PROCESS AND APPARATUS TO CONTROL THE CHEMICAL STATE OF A MATERIAL

Mitchell R. Swartz, Malden, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 28, 1975, Ser. No. 636,290
Int. Cl.[2] G01N *27/26, 27/28*; A61B *10/00*
U.S. Cl. 23—232 E **53 Claims**



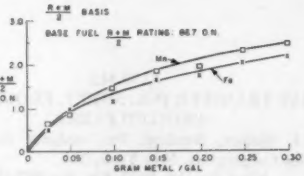
51. A method of detecting the presence and the amount of a specific molecular species, that comprises: exposing a material to a fluid containing the molecular species of interest, said material being one whose properties change when the material is exposed to the species by virtue of reversible binding of the molecules of the species said material being a composite that includes a sensing material and an electroactive mediator, said material being one that is subject to deterioration; sensing the magnitude of the change in the properties as a consequence of said reversible binding to sense the presence of the molecular species and the partial pressure thereof in the fluid; directing radiation upon the composite material; and introducing charge carriers to said sensing material to counteract any unwanted deterioration that occurs therein, said electroactive mediator and said radiation acting to facilitate the introduction of charge carriers to the sensing material.

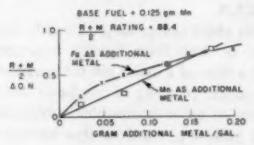
4,139,349

FUEL COMPOSITIONS CONTAINING SYNERGISTIC MIXTURES OF IRON AND MANGANESE ANTIKNOCK COMPOUNDS

Donald H. Payne, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Sep. 21, 1977, Ser. No. 835,805
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—68 **9 Claims**





1. A lead-free hydrocarbon fuel composition consisting essentially of hydrocarbons boiling in the gasoline boiling range of about 20° C. to 225° C., having dissolved therein a combination of iron and manganese antiknock compounds in amounts to provide about 0.05 to 0.25 gram of total metal per gallon of fuel, said combination consisting essentially of about

(i) 10% to 70% of iron, by weight of total metal, provided by at least one member of the group dicyclopentadienyl iron and substituted dicyclopentadienyl iron in which the substituent consists of one or two alkyl radicals of 1 or 2 carbon atoms, and

(ii) 30% to 90% of manganese, by weight of total metal, provided by at least one member of the group cyclopentadienyl manganese tricarbonyl and substituted cyclopentadienyl manganese tricarbonyl in which the substituent consists of one or two alkyl radicals of 1 or 2 carbon atoms.

4,139,350

APPARATUS FOR AND A METHOD OF SEPARATING A FOAM INTO ITS LIQUID AND GASEOUS COMPONENTS

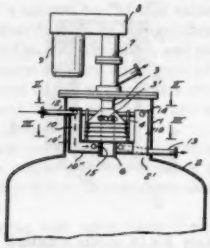
Konstantin Sotirianos, Stafa, Switzerland, assignor to Process Engineering Company, Mannedorf, Switzerland

Filed Oct. 11, 1977, Ser. No. 840,625

Claims priority, application Switzerland, Oct. 11, 1976, 12910/76

Int. Cl.[2] B01D *19/02*

U.S. Cl. 55—42 **16 Claims**



1. In an apparatus for separating a foam into its constituent liquid and gaseous components, a combination comprising a vessel in which the foam is formed and having an opening; and foam-breaking means including a housing communicating with said vessel through said opening, rotatable foam breakers located in said housing for breaking up the foam, means for rotating said foam breakers, hollow stationary baffles located in said housing and outwardly surrounding said foam breakers for preventing a smooth circulation of the foam, and means for facilitating the separation of the foam by admitting a heat exchange substance into the hollows of said baffles and effecting a heat exchange between said heat exchange substance and the foam.

16. A method of separating into its constituent liquid and gaseous components a foam formed in a vessel having an opening, comprising the steps of

feeding the foam into a housing communicating with the vessel through the opening and having rotatable foam breakers and hollow stationary baffles;

breaking up the foam by the rotating foam breakers;

effecting turbulence of the foam by the stationary baffles so as to prevent a smooth circulation of the foam; and

admitting a heat exchange substance into the hollows of said baffles so as to effect heat exchange between the heat exchange substance and the foam and to thereby facilitate the separation of the foam.

4,139,351

SEPARATION OF FINELY DIVIDED METAL OXIDES, PRODUCED BY COMBUSTION OF METAL CARBONYLS, FROM A STREAM OF GAS

Werner Ostertag, Gruenstadt; Franz L. Ebenhoech, Ludwigshafen; Gerd Wunsch, Speyer; Erfried Voelkl, Frankenthal, and Theodor Mader, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 7, 1977, Ser. No. 785,362

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619084

Int. Cl.[2] B01D *46/00*

U.S. Cl. 55—97 **6 Claims**

1. A process for cooling a gas stream produced by the combustion of metal carbonyls in a reactor and separating finely divided metal oxides contained in said gas stream which comprises:

subjecting the stream of hot gas containing metal oxides in a curved tubular zone to a permanent change of direction which is sufficient to cause a centrifugal acceleration which is from at least 1,000 to 10,000 times the acceleration due to gravity, said curved tubular zone being in the form of a spirally shaped tube, while simultaneously

cooling the stream of hot gas externally in the curved tubular zone from a temperature of from 500° to 900° C. to a temperature of from 10° to 150° C., and

subsequently filtering the metal oxide from the cooled gas stream.

4,139,352

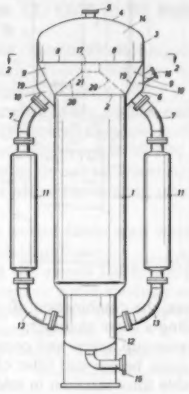
GAS LIQUID SEPARATOR

Malcolm W. McEwan, and Marius B. Teekens, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 14, 1978, Ser. No. 886,505

Int. Cl.[2] B01D *19/00*

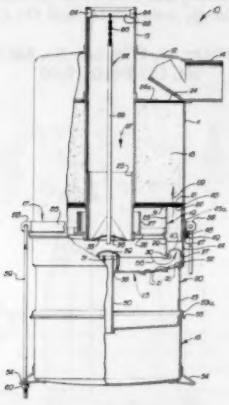
U.S. Cl. 55—159 **9 Claims**



1. An apparatus for separating gas and liquid from a gas-liquid mixture which comprises a vertically oriented, central upflow tube opening at its upper end into a separator hood which is fitted over and around the upper end of said upflow tube thereby providing an enclosed space above the upper end of the upflow tube for gas collection and an enclosed space outside and below the upper end of the upflow tube for liquid collection, said separator hood being equipped with a gas outlet above the upper end of the upflow tube and a liquid outlet below the upper end of the upflow tube; liquid communication between the upflow tube and the separator hood being provided by an overflow edge at the upper end of the upflow tube, said overflow edge being comprised of a series of vertically oriented partitions which traverse the space directly above the upflow tube and extend outwardly into the space adjacent to the upper end of the upflow tube bounded by the separator hood, thereby dividing the lower portion of the space in the separator hood into a series of adjacent, open top compartments of alternating types, one type of compartment being a riser which is bottomless in the space over the upflow tube and which has a bottom in the space outside the upper end of the upflow tube such that the gas-liquid mixture being separated can flow in an upwards direction into and over the upper edge of the compartment and the other type being a downcomer which has a bottom in the space over the upflow tube and is bottomless in the space outside the upper end of the upflow tube such that the liquid portion of the liquid mixture being separated can flow in a downwards direction from the upper edge of the compartment into the liquid collection space bounded by the separator hood, the arrangement of adjacent riser and downcomer compartment being such that any liquid being separated from the gas-liquid mixture in the upflow tube first passes through a riser compartment and over a partition

into a downcomer compartment before it passes into the liquid collection space bounded by the separator hood outside and below the upper end of the upflow tube.

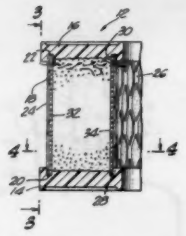
4,139,353
AIR CLEANER
Herman H. Garner, Claremont, Calif., assignor to Vortox Company, Claremont, Calif.
Filed Jul. 5, 1977, Ser. No. 813,190
Int. Cl.[2] B01D *47/02*
U.S. Cl. 55—253 **3 Claims**



1. In an air cleaner, the combination of:
(a) a shell providing a filter chamber;
(b) a liquid reservoir cup below and connected to said shell with an open space below said filter chamber;
(c) an air permeable filter medium in said filter chamber;
(d) air inlet means connected to said shell and opening into said open space;
(e) deflector means located in said reservoir cup for directing an air stream issuing from said air inlet means upwardly through said open space and into said filter medium, whereby the air stream will carry liquid when contained in said reservoir from said reservoir upwardly into said filter medium;
(f) an air outlet connected to said shell and communicating with said filter chamber;
(g) overflow means communicating with said reservoir cup, whereby liquid drains from said reservoir cup when liquid is contained in said cup and rises above said overflow means;
(h) said overflow means including a lower cup below and connected to said reservoir cup; and
(i) said overflow means including means interconnecting said cups in communication adjacent their centers.

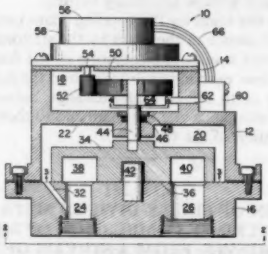
4,139,354
FILTER FOR THE REMOVAL OF PARTICULATE AND VAPOROUS MERCURY
Dean G. Giles, Valinda, Calif., assignor to Futurecraft Corporation, City of Industry, Calif.
Filed Jul. 21, 1977, Ser. No. 817,670
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—387 **6 Claims**

6. A filter for removal of mercury in vapor and particulate form from a stream of air passing therethrough at relatively high velocity, comprising:
(a) vertically spaced-apart top and bottom annular-shaped members said members having irregularly shaped plural surfaces;
(b) transversely spaced apart walls extending between said top and bottom members defining an annular-shaped cavity therebetween, said walls comprising a pair of contiguous, substantially parallel outer walls and a pair of contiguous, substantially parallel inner walls each of said pairs of walls being sealably interconnected with said top and bottom members and comprising a first, substantially rigid open mesh wall and a second relatively thin porous membrane wall; and
(c) a multiplicity of particles of iodine impregnated charcoal encapsulated within said cavity, said particle size being



approximately 8×16 mesh standard with said particles being vibrated to provide an apparent material density within said cavity of approximately 0.5 to approximately 0.6 g/ml, a pore volume of on the order of 0.5 ml/gm and a void volume of approximately 0.4 ml/ml whereby said material provides controlled impedance to the flow of air therethrough permitting mercury vapor to be effectively removed from the stream of air being exhausted from said work enclosure.

4,139,355
FOUR WAVE VALVE FOR REVERSIBLE CYCLE REFRIGERATION SYSTEM
Jesse H. Turner, and Jack D. Raymer, both of Auburn, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.
Filed Apr. 28, 1977, Ser. No. 791,744
Int. Cl.[2] F25B *13/00*
U.S. Cl. 62—324 **3 Claims**



1. In a reversible refrigerating system having a compressor, a first heat exchanger having an inlet and an outlet, a second heat exchanger having an inlet and an outlet, a four-way valve, high pressure and suction lines connecting said compressor and four-way valve, means interconnecting said heat exchangers in series relationship with one another, and means connecting the free ends of said heat exchangers to said four-way valve, an improved four-way valve, which comprises:
a housing;
a cavity in said housing defined by a plurality of walls with the inner surface of an outer wall being substantially planar;
a plurality of ports through said planar wall, a first one of said ports being adapted to be connected to said high pressure line, a second one of said ports being adapted to be connected to said suction line, a third one of said ports

being adapted to be connected to the free end of said first heat exchanger, and a fourth one of said ports being adapted to be connected to the free end of said second heat exchanger;

a valve plate rotatably mounted in said cavity, said valve plate including a first substantially planar surface in abutting contact with said planar wall;

a high pressure by-pass port connecting said high pressure line and said cavity;

a pair of equally-sized recesses in said planar surface;

said recesses and said ports being arranged so that a first one of said recesses connects said first and third ports to one another and a second one of said recesses connects said second and fourth ports to one another when said valve plate is rotated to a first position, and said first one of said recesses connects said first and fourth ports to one another and said second one of said recesses connects said second and third ports to one another when said valve plate is rotated to a second position;

said recesses and ports further being arranged so that said first, second, third and fourth ports are all connected together at a position intermediate said first and second positions; and

means for rotating said valve plate comprising an electric motor and gear reduction assembly situated between said electric motor and said valve plate.

4,139,356

REFRIGERATING APPARATUS

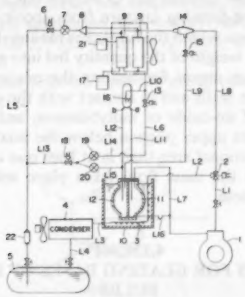
Kiyoshi Hattori, Aomori, Japan, assignor to Taisei Kogyo Kabushiki Kaisha, Aomori, Japan

Filed Nov. 30, 1977, Ser. No. 855,922

Claims priority, application Japan, Dec. 6, 1976, 51-145562; Oct. 24, 1977, 52-141843

Int. Cl.² F25B *47/00, 43/00*

U.S. Cl. 62—278 **5 Claims**



1. A refrigerating apparatus comprising a refrigerant compressor, a radiator being connected at an inlet port thereof to an outlet spouting port of said compressor, a condenser being connected at an inlet port thereof to an outlet port of said radiator, a receiver being connected at an inlet port thereof to an outlet port of said condenser, a cooler being connected at inlet port thereof to an outlet port of said receiver, with an expansion valve being mounted between them, a water tank in which said radiator is dipped, an accumulator being dipped in said water tank, a first line being connected at an inlet end thereof to an outlet port of said cooler and being inserted an outlet end thereof into inside of said accumulator, a return line being inserted an inlet end thereof into inside of said accumulator and being connected at an outlet end thereof to an inlet suction port of said compressor, a trap being connected at an inlet port thereof to outlet port of said cooler and having an outlet port of large flowing resistance, a second line being connected at inlet end thereof to outlet port of said trap and being inserted outlet end thereof into inside of said accumulator, an ejector having an inlet port, an outlet port and an inlet suction port and being connected at said inlet port to an outlet spouting port of said compressor, being connected at said outlet port to inlet port of said cooler and being connected at said inlet suction port to inside of said accumulator, a first valve being mounted between an outlet spouting port of said compressor and an inlet port of said ejector, a second valve being mounted between outlet spouting port of said compressor and inlet port of said radiator, said second valve being opened when said first valve is closed, and a third valve being mounted in said first line, said third valve being opened when said first valve is closed.

4,139,357

CHEMICAL DESIZING OF FIBER GLASS FABRIC

George L. Brodmann, Bath, and Dudley K. Moses, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 8, 1977, Ser. No. 858,871

Int. Cl.² C03C *25/00*; B05D *1/38*

U.S. Cl. 65—30 R **8 Claims**

1. A process for chemically cleaning and desizing sized fiber glass fabric which process excludes high temperature heat treatment comprising the steps of:

(a) wetting the sized fabric with an aqueous treating solution to solubilize the starch component of the size, said treating solution containing from about 1 to 10 percent by weight hydrogen peroxide and sufficient ammonium hydroxide to maintain the pH of the treating solution at between about 8.5 to 11.0;

(b) rinsing the wetted fabric with water to remove the solubilized starch therefrom;

(c) contacting the rinsed fabric with an organic cleaning solvent to remove water-insoluble components of the size as well as oil and grease picked up by the fabric during the weaving operation; and

(d) drying the cleaned, substantially size-free fabric.

4,139,358

METHOD OF FORMING A VESSEL WITH POURING LIP

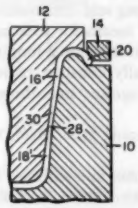
Rudolph Holecek, Souppes sur Loing; Paul Mouchikhine, Saint-Pierre les Nemours, and Serge A. Renault, Montigny-sur-Loing, all of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,214

Claims priority, application France, Jun. 28, 1977, 77 19754

Int. Cl.² C03B *9/14, 11/00*

U.S. Cl. 65—68 **4 Claims**



1. A method of press-forming glass and glass ceramic materials into an article having a pouring lip projecting outwardly from an upper extent thereof wherein the material is distributed during pressing so as to uniformly form the upper extent of the article comprising, supplying molten material to be formed to a mold cavity having an outwardly projecting lip-forming portion, flowing such material upwardly within the mold cavity, restricting the upward flow of such material below said lip-forming portion to reduce the thickness of a wall portion of said article below said pouring lip relative to remaining wall portions thereof, and continuing the upward flow of such material so that such material substantially uniformly fills the upper extent of said mold cavity including said lip-forming

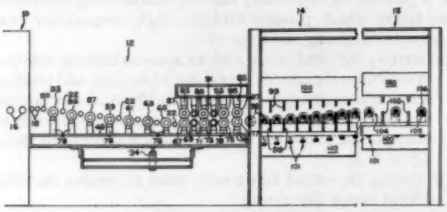
portion while providing the proper amount of molten material to remaining portions of said upper extent.

4,139,359

METHOD AND APPARATUS FOR SHAPING GLASS SHEETS BY ROLL FORMING

Randall S. Johnson, Bellwood, and Terry L. Wolfe, Tyrone, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1977, Ser. No. 847,876
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—107 **17 Claims**



1. Apparatus for shaping and tempering glass sheets to a shape comprising a longitudinal component of curvature having a substantially constant radius of curvature comprising a roll forming section and a quenching section disposed in end to end relation, a series of longitudinally spaced forming rolls each extending transversely of a longitudinal path of movement of substantially constant radius of curvature in said roll forming section, a series of additional shaped rolls longitudinally spaced from one another, each extending transversely of a continuation of said path of movement of substantially constant radius of curvature in said quenching section, means for supplying quenching medium to said quenching section, means for delivering discrete glass sheets at a temperature sufficient for shaping to said roll forming section, means for rigidly supporting said rolls along said path of movement in said roll forming section and along said continuation of said path in said quenching section and means for rotating said rolls whereby said discrete glass sheets develop a longitudinal component of curvature of substantially constant radius of curvature with minimum deviation in surface smoothness as they are shaped and tempered.

14. A method of shaping glass sheets by roll forming comprising:

heating each glass sheet to a softened condition,

conveying each heated sheet in a longitudinal direction through a roll forming station on alternate cylindrical conveyor rolls and transversely curved forming rolls, all having parallel, horizontal, stationary axes of rotation:

initially supporting the majority of the transverse width of the glass sheet on the conveyor rolls, and as the glass sheet passes along the roll forming station, progressively transferring support of the glass sheet to the curved forming rolls until a majority of the transverse width of the glass sheet is supported by the forming rolls; and

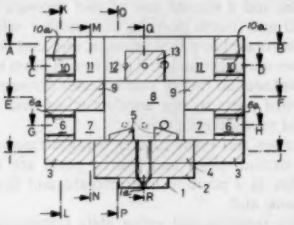
as the support is being transferred to the forming rolls, permitting the glass sheet to sag by the force of gravity into substantial conformity with the transverse curvature of the forming rolls.

4,139,360

METHOD OF INCLUSION MELTING GLASS WITH RADIOACTIVE COMPONENTS, AND FURNACE FOR CARRYING OUT SUCH METHOD

Helmut Piper, Lohr, Fed. Rep. of Germany, assignor to Sorg GmbH & Co. Kg, Plochsbach, Fed. Rep. of Germany

Filed Jul. 11, 1977, Ser. No. 814,585
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631220
Int. Cl.[2] C03B *5/02*
U.S. Cl. 65—134 **11 Claims**



1. A method of inclusion melting of glass with radioactive components, particularly from the reprocessing of nuclear fuel elements, comprising: feeding radioactive components in the form of one of an aqueous solution or of a slurry into a furnace from above in combination with a mixture suitable for the melt-forming of glass; and heating the molten mass of glass and radioactive components by passing electrical current directly therethrough, wherein the mass flow takes place solely vertically from top to bottom.

5. A furnace for the inclusion melting of glass with radioactive components comprising furnace walls composed of ceramic materials; means for feeding a mixture of radioactive components in the form of one of an aqueous solution or of a slurry and a melt-forming mixture from above; a plurality of pressure gauges on which the furnace is mounted for positively determining the weight of the quantity fed into and discharged from the furnace; means for heating the mixture comprising electrodes in the walls and in contact with the melt and composed of one of tin-oxide or molybdenum; and wherein said furnace has in its upper portion below the mixture blanket a greater cross-sectional area than in at least one of the portions therebelow and the mass flow takes place solely vertically from top to bottom.

4,139,361

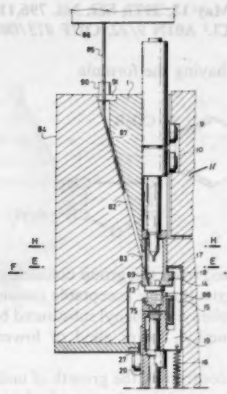
APPARATUS FOR GLAZING BASES OF ELECTRIC BULBS

Otakar Zouhar, Nove Mesto nad Vahom, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia

Filed Aug. 30, 1977, Ser. No. 829,154
Claims priority, application Czechoslovakia, Aug. 30, 1976, 5611/76
Int. Cl.[2] C03C *27/02*; C03B *23/20*; H01J *9/06*
U.S. Cl. 65—154 **10 Claims**

1. Apparatus for glazing the bases of electric bulbs, comprising a frame, a rotor supported on the frame for rotation about an axis, driving means for continuously rotating the rotor, a plurality of angularly spaced combined tools for glazing bases carried by the rotor along its circumference, each tool being composed of a first part and a second part aligned therewith, the first part of the tool comprising a punch mounted for reciprocation toward and away from the second part of the tool, the second part of the tool comprising receptacle means for receiving a sleeve and a contact for a base, means for feeding a contact to each of the receptacle means while the receptacle means is moving with the rotor; means for feeding a sleeve to each of the receptacle means containing a contact

while such receptacle means is moving with the rotor and for assembling such sleeve with the contact, means for feeding molten glass to the interior of the sleeve thus assembled with



the contact in the receptacle means, and means for thereafter thrusting a punch while moving with the rotor toward the second part of the tool to shape the glass deposited in the assembly.

4,139,362

BIOCIDALLY-ACTIVE 1,2,3-BENZOTRISULFIDES

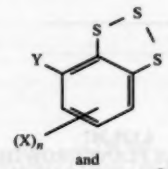
Khalid Rasheed, Weslaco, and James D. Warkentin, McAllen, both of Tex., assignors to The Ansul Company, Marinette, Wis.

Continuation-in-part of Ser. No. 618,255, Sep. 30, 1975, Pat. No. 4,084,954. This application Aug. 4, 1977, Ser. No. 821,978

Int. Cl.[2] A61K *31/385;* **A01N** *9/12, 9/14;* **C07D** *341/00*

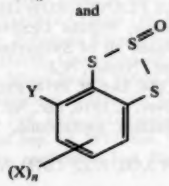
U.S. Cl. 71—90 **30 Claims**

1. A compound selected from the group consisting of those of the formulae:



I

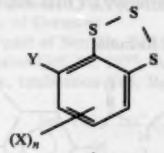
and



II

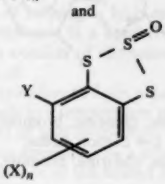
wherein Y is selected from nitro and trifluoromethyl; X is selected from alkyl and alkenyl of up to 6 carbon atoms, nitro, trichloromethyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulfoxyl, trifluoromethylsulfonyl, methoxymethyl, cyano, carboxy, carbamyl, halogen (F, Cl, Br, I), hydroxy, acetylamino, amino, N-phenylamino, N,N-diallylamino, alkoxy, dimethylaminodithiocarbamyl, carboalkoxy, alkylthio, mono- and dialkylamino, N-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfoxy, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms; n is an integer from 0 to 3; and salts thereof.

22. A method of treating pests associated with growing plants to beneficially enhance the growth and/or yield-potential of said growing plants which comprises treating soil, seed or said plants with a biocidally active amount of a compound selected from the group consisting of those of the formulae:



I

and



II

wherein Y is selected from hydrogen, cyano, alkylsulfonyl, nitro and trifluoromethyl; X is selected from alkyl and alkenyl of up to 6 carbon atoms, nitro, trichloromethyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulfoxyl, trifluoromethylsulfonyl, methoxymethyl, cyano, carboxy, carbamyl, halogen (F, Cl, Br, I), hydroxy, acetylamino, amino, N-phenylamino, N,N-diallylamino, alkoxy, dimethylaminodithiocarbamyl, carboalkoxy, alkylthio, mono- and dialkylamino, N-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfoxy, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms; n is an integer from 0 to 3; and salts thereof.

4,139,363

THIATRIAZOLIDIN-4-ONE-2-OXIDE HERBICIDES

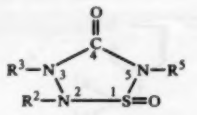
Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 29, 1977, Ser. No. 855,657

Int. Cl.[2] A01N *9/14, 21/02;* **C07D** *285/00*

U.S. Cl. 71—91 **18 Claims**

1. A compound of the formula



(I)

wherein R^2, R^3 and R^5 individually are alkyl of 1 to 6 carbon atoms; phenyl, naphthyl; or phenyl or naphthyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkoxy of 1 to 4 carbon atoms and alkyl of 1 to 4 carbon atoms or 1 substituent selected from trifluoromethyl, trichloromethyl or tribromomethyl, phenoxy, phenoxy substituted with 1 to 2 fluoro, chloro, bromo or alkyl of 1 to 4 carbon atoms.

9. A method for the control of undesirable vegetation which comprises applying to said vegetation or its habitat an herbicidally effective amount of a compound of the formula defined in claim **1.**

10. An herbicidal composition comprising a biologically inert carrier and an herbicidally effective amount of a compound of the formula defined in claim **1.**

4,139,364

TRIAZOLONE HERBICIDES

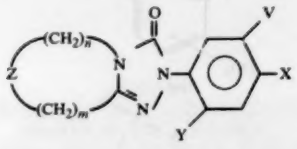
Anthony D. Wolf, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1977, Ser. No. 823,204

Int. Cl.[2] A01N *9/22;* **C07D** *498/02*

U.S. Cl. 71—92 **15 Claims**

1. A compound of the formula



where

V is hydrogen, fluorine, chlorine, bromine, methyl or OR where R is alkyl of 1–4 carbon atoms;

X is hydrogen, fluorine, chlorine, bromine, cyano, methyl, methoxy, or nitro;

Y is hydrogen, fluorine, chlorine, bromine, or methyl;

n, m is 0, 1, 2, 3 or 4;

Q is oxygen or sulfur;

Z is oxygen;

p is 0, 1 or 2 and

R′ is alkyl of 1–3 carbon atoms

with the provisos that

(1) n + m = 2, 3, or 4; and

(2) if n + m = 2 or 4 then Y, X ≠ H.

6. A composition for the control of undesirable vegetation consisting essentially of a compound of claim **1** and at least one of (a) a surface-active agent, and (b) a solid or liquid diluent.

4,139,365

METHOD OF REGULATING PLANT GROWTH

Leonard G. Copping, and John F. Garrod, both of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

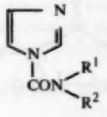
Filed Mar. 31, 1977, Ser. No. 783,084

Claims priority, application United Kingdom, Apr. 10, 1976, 14728/76

Int. Cl.[2] A01N *9/22, 5/00*

U.S. Cl. 71—92 **14 Claims**

1. A method of regulating plant growth which comprises applying to a plant selected from the group consisting of sugar cane, rice, tomatoes, sunflowers, sorghum, maize and pot plants a growth-regulating amount of a compound having the formula



in which R^1 is selected from the group consisting of alkyl containing 1 to 10 carbon atoms, alkenyl containing 3 to 5 carbon atoms, optionally substituted phenyl and benzyl, wherein the substituted phenyl nucleus has 1 to 4 substituents selected from the group consisting of halo, alkoxy containing 1 or 2 carbon atoms, alkyl containing 1 to 4 carbon atoms, trihalomethyl and cyano, and R^2 is selected from the group consisting of alkyl containing 1 to 10 carbon atoms, alkenyl containing 3 to 5 carbon atoms, optionally substituted phenyl, benzyl, 2-phenethyl and phenoxyalkyl of the formula $PhO(CH_2)_n$ where *n* is 2 or 3, wherein the substituted phenyl nucleus has 1 to 4 substituents selected from the substituted group consisting of halo, alkoxy containing 1 to 2 carbon atoms, alkyl containing 1 to 4 carbon atoms, trihalomethyl and cyano, whereby the crop yield of the plant is increased or the plant size is reduced.

4,139,366

2-[5-ARYL-2-ISOXAZOLIN-3-YL]BENZOATES AND USE AS HERBICIDES

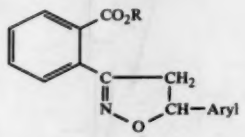
Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 12, 1977, Ser. No. 796,111

Int. Cl.[2] A01N *9/22;* **C07F** *413/04*

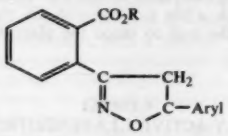
U.S. Cl. 71—94 **7 Claims**

1. A compound having the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl and agriculturally acceptable cations; and Aryl is pyridyl, naphthyl, phenyl or phenyl substituted by one or more halogen, trifluoromethyl, lower alkyl or lower alkoxy moieties.

6. A method for controlling the growth of undesired vegetation which comprises applying thereto a herbicidally effective amount of a compound having the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl and agriculturally acceptable cations; and Aryl is pyridyl, naphthyl, phenyl or phenyl substituted by one or more halogen, trifluoromethyl, lower alkyl or lower alkoxy moieties.

4,139,367

PIPERIDINE SALTS AS PLANT GROWTH REGULANTS

Gerhard Hüppi, Gockhausen; Wijitha DeSilva, Schöfflisdorf, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

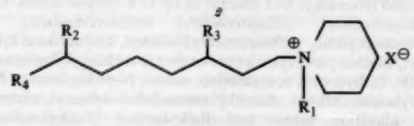
Division of Ser. No. 531,134, Dec. 9, 1974, Pat. No. 4,014,678. This application Nov. 2, 1976, Ser. No. 737,968

Claims priority, application Switzerland, Dec. 14, 1973, 17546/73

Int. Cl.[2] A01N *5/00, 9/22;* **C07D** *211/06*

U.S. Cl. 71—94 **8 Claims**

1. A compound represented by the formula



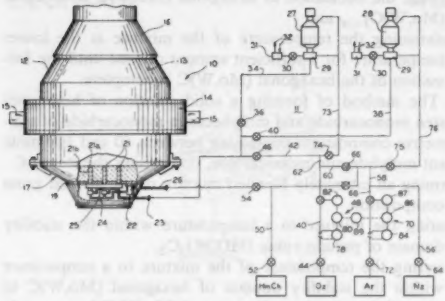
wherein R_1 is lower alkyl having 1–4 carbons, R_2, R_3 and R_4 each are lower alkyl having 1–4 carbons and X is chlorine, bromine or iodine.

4,139,368

METALLURGICAL METHOD

Eberhard G. Schempp, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1977, Ser. No. 840,785
Int. Cl.[2] C21C 5/34
U.S. Cl. 75—52 3 Claims



1. A method of treating molten ferrous metal to produce low carbon steel comprising the steps of containing said metal in a metallurgical vessel, delivering oxygen to said molten metal vertically upwardly through the bottom of said vessel during an initial period to reduce the level of carbon in said metal and delivering a hydrocarbon shielding fluid to said vessel in surrounding relation to said oxygen, continuing the reduction of carbon until the level thereof falls to about 0.02% and then mixing progressively larger proportions of argon with said oxygen during a second period, adjusting the flow rates of said argon and oxygen so that initially the major portion of the gas mixture delivered through said tuyere passage during said second period is oxygen and a minor portion is argon, increasing the proportion of argon and decreasing the proportion of oxygen in said mixture as the percentage of carbon in said ferrous metal further decreases until the proportion of said argon delivered is at least approximately equal to said oxygen.

4,139,369

DESULPHURIZATION OF AN IRON MELT

Joachim Kandler, Erftstadt; Klaus Komorniczyk, Kerpen; Hans-Dieter Thiel, Hürth; Georg Strauss; Wilhelm Portz, both of Erftstadt, and Albert Braun, Hürth-Burbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1977, Ser. No. 832,830
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641817
Int. Cl.[2] C21C 7/02
U.S. Cl. 75—58 2 Claims

1. In the process for the desulphurization of an iron melt comprising adding to the melt a powder mixture comprising metallic magnesium and at least one calcium compound, the latter being selected from the group consisting of calcium carbide, calcium oxide, calcium carbonate and dolomite, and the said at least one calcium compound being used in the form of particles with a size of 0.06 to 3 mm, the improvement which comprises adding a powder mixture containing 0.1 to 2.5 weight % of metallic magnesium in the form of particles having a size of 0.060 to 0.095 mm.

4,139,370

METHOD OF REFINING FERRO-ALLOYS

Friedrich Breuer, Eschweiler; Karl Brotzmann, Sulzbach-Rosenberg; Günter Düderstadt, Hosel; Rudolf Fichte, Nuremberg, and Fritz Stadler, Meererbusch, all of Fed. Rep. of Germany, assignors to Gesellschaft für Elektrometallurgie mbH, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 527,826, Nov. 27, 1974. This application Oct. 17, 1977, Ser. No. 842,349
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1972, 2201388
Int. Cl.[2] C21C 5/34
U.S. Cl. 75—60 8 Claims

1. A method of refining a high-carbon ferro-alloy whose predominant constituent is a nonferrous metal selected from the group which consists of chromium and manganese, comprising the steps of:

melting the ferro-alloy to form a bath;

heating said bath to a temperature at least 100° C. above the melting point of said ferro-alloy;

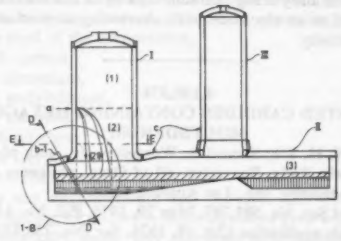
blowing oxygen enveloped by a protective gas into the melt below the surface of the heated bath, in an amount sufficient to oxidize one weight percent of carbon in the melt within a period not less than about one minute nor greater than about then minutes, at a rate ranging between substantially 3 and 15 cubic meters S.T.P. per minute multiplied by the number of metric tones of ferro-alloy in the melt, with oxidation of substantially 0.2% to 1% of carbon per minute.

4,139,371

PROCESS AND DEVICE FOR SUSPENSION SMELTING OF FINELY DIVIDED OXIDE AND/OR SULFIDE ORES AND CONCENTRATES, ESPECIALLY COPPER AND/OR NICKEL CONCENTRATES RICH IN IRON

Simo A. I. Mäkipirtti, Nakkila, and Jussi J. Kayhko, Pori, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 588,602, Jun. 20, 1975, abandoned. This application Dec. 22, 1976, Ser. No. 753,575
Claims priority, application Finland, Jun. 27, 1974, 1992/74
Int. Cl.[2] C22B 15/00, 23/02
U.S. Cl. 75—73 4 Claims



1. An improved process for the suspension smelting of finely-divided, iron-rich nickel and nickel-copper concentrates comprising feeding a suspension of a finely divided feed mixture including said concentrates downwards through a suspension oxidation zone, said mixture being in suspension in preheated oxygen-containing gas, at a temperature of at least the reaction temperature for the oxidation and partial smelting of the concentrates in suspension, and after passage through said oxidation zone, feeding said suspension into a suspension reduction zone for partial sulphidization of oxidized material and causing the suspension to change its flow direction perpendicularly from downwards to sidewards so that most of the material present in the suspension impinges against a surface of accumulated melt in a melt reaction zone below said suspension reduction zone, producing raw metal from the valuable metals present in the melt, directing gases from the melt reac-

tion zone to and through a rising flow zone and separating solid materials from the gases in the rising-flow zone for return to the suspension oxidation zone, the improvement comprising injecting oxygen containing gas horizontally into a matte phase of the melt reaction zone for said production of raw metal by producing a metallized sulfide matte with a minimum sulfur concentration of 1% by weight and a slag having a degree of oxidation which corresponds at 1300° C. to a partial pressure of oxygen of at least 10^{-10} atmospheres.

4,139,372
COPPER-BASED ALLOY

Evgeny P. Danelia, ulitsa Butyrskaya, 5, kv. 25; Vladimir M. Rozenberg, ulitsa Baikalskaya, 40/17, kv. 76; Vladimir I. Solopov, ulitsa Bolshaya Dekabrskaya, 4, kv. 45; Jury F. Shevakin, Telegrafny pereulok, 11/16, kv. 53; Efim S. Shpichinetsky, ulitsa Donetskaya, 6, kv. 93; Ilya S. Berin, ulitsa Papernika, 8, kv. 95; Emmanuil Z. Yankovsky, Novo-Gireevo, Saperny proezd, 4, kv. 12, and Max A. Entin, ulitsa Fridrikha Engelsa, 28/30, korpus 1, kv. 90, all of Moscow, U.S.S.R.

Filed Sep. 28, 1977, Ser. No. 837,612

Int. Cl.[2] C22C *9/01*; C21D *1/00*; C22F *1/08*

U.S. Cl. 75—162 **8 Claims**

1. A copper-based alloy possessing an increased mechanical strength both at room and elevated temperatures combined with an electrical conductivity of 75 to 97% of that of copper, containing, as percent by weight:

aluminium: 0.01 to 1

hafnium: 0.005 to 1

copper: the balance.

4,139,373
ALLOYS OF TITANIUM

John H. F. Notton, Wembley, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Nov. 22, 1976, Ser. No. 744,023

Claims priority, application United Kingdom, Nov. 27, 1975, 48788/75

Int. Cl.[2] C22C *14/00*

U.S. Cl. 75—175.5 **1 Claim**

1. A titanium-based alloy consisting, apart from impurities of 88 weight % titanium, 6 weight % platinum and 6 weight % iridium, said alloy being characterized by its low corrosion rate when used as an electrode with alternating current at a high current density.

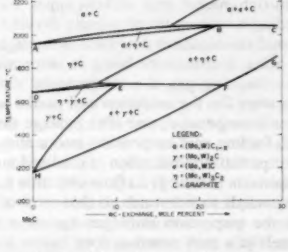
4,139,374
CEMENTED CARBIDES CONTAINING HEXAGONAL MOLYBDENUM

Stephen W. H. Yih; Samuel A. Worcester, Jr., both of Albany, and Erwin Rudy, Beaverton, all of Oreg., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 581,787, May 29, 1975, Pat. No. 4,049,380. This application Oct. 18, 1976, Ser. No. 733,533

Int. Cl.[2] C22C *29/00*

U.S. Cl. 75—204 **10 Claims**



1. The method of forming a solid solution of hexagonal tungsten monocarbide and molybdenum monocarbide of stoichiometric composition containing between 10 and 100 mole percent molybdenum monocarbide, comprising the steps of:

forming an intimately blended mixture of the desired gross composition,

heating the mixture to a temperature within the stability domain of cubic $(Mo,W)C_{1-x}$

lowering the temperature of the mixture to a temperature within the stability domain of hexagonal (Mo,W)C to cause the nucleation of hexagonal (Mo,W)C from cubic $(Mo,W)C_{1-x}$ and

maintaining the temperature of the mixture at the lower temperature for a sufficient amount of time until the formation of the hexagonal (Mo,W)C is complete.

6. The method of forming a solid solution of hexagonal tungsten monocarbide and molybdenum monocarbide of stoichiometric composition containing between 10 and 100 mole percent molybdenum monocarbide, comprising the steps of:

forming an intimately blended mixture of the desired gross composition,

heating the mixture to a temperature within the stability domain of pseudo cubic $(MO,W)_3C_2$,

lowering the temperature of the mixture to a temperature within the stability domain of hexagonal (Mo,W)C to cause the nucleation of hexagonal (Mo,W)C from pseudo cubic $(Mo,W)_3C_2$, and

maintaining the temperature of the mixture at the lower temperature of a sufficient amount of time until the formation of the hexagonal (Mo,W)C is complete.

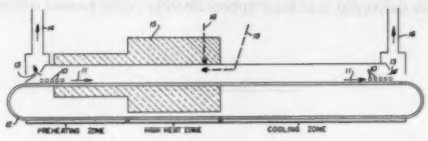
4,139,375
PROCESS FOR SINTERING POWDER METAL PARTS

Jack Solomon, Rye, and Thomas F. Kinneman, Peekskill, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,615

Int. Cl.[2] B22F *3/00*

U.S. Cl. 75—224 **3 Claims**



1. In a process for sintering powder metal parts comprising:

(a) passing the parts through a furnace adapted therefor from its upstream end to its downstream end, said furnace having two successive zones, an upstream zone, which is maintained at a temperature in the range of about 800° F. to about 2200° F. and a cooling zone,

said furnace further having an atmosphere therein comprising carbon monoxide, hydrogen, carbon dioxide, water and nitrogen distributed throughout the zones;

(b) permitting the parts to reside in the upsteam zone for a sufficient length of time to cause sintering; and

(c) removing the sintered parts from the furnace,

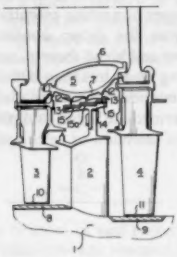
the improvement comprising:

introducing a mixture consisting essentially of methanol and nitrogen into the upstream zone at a point where a temperature of at least about 1500° F. is maintained, the methanol and nitrogen being in a ratio sufficient to provide, when subjected to such temperature, an atmosphere comprising, in percent by volume, about 1 to about 20 percent carbon monoxide; about 1 to about 40 percent hydrogen; and balance nitrogen.

4,139,376
ABRADABLE SEAL MATERIAL AND COMPOSITION THEREOF

Arnold R. Erickson, Orange, and Carlino Panzera, Cromwell, both of Conn., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 440,794, Feb. 28, 1974, abandoned.
This application Nov. 2, 1976, Ser. No. 737,504
Int. Cl.[2] B22F 5/00; F01D 5/20; F03B 11/00; F03D 11/00
U.S. Cl. 75—229 44 Claims



1. A porous metal mat or compact resistant to oxidation at high temperatures comprising:

(a) a sintered mass of fine metal particles composed of a homogeneous alloy consisting essentially of the composition I, Cr, Al, II, or I, Cr, Al, III wherein I is at least one member of the group consisting of Fe, Co, Ni and mixtures of Co and Ni, II is at least one member of the group consisting of Y, Sc and Rare Earths, and III is at least one member of the group consisting of Hf, Zr, Cb and Ta;

(b) the components of the alloy having essentially the following weight percents: 10–27% Cr, not more than 5–20% Al, 0.01–0.5% II; when I=Fe, then III=0.1–1 %; and when I=Co, Ni or Co and Ni, then III=0.1–2.0; and I=the remainder;

(c) the exposed surface of the particles being capable of developing a protective coating of Al_2O_3 at least 0.5 micron in thickness over an underlying substrate of at least 4% Al content.

37. A metal particle resistant to oxidation at high temperatures composed of a homogeneous alloy consisting essentially of the composition I, Cr, Al, II, or I, Cr, Al, III, wherein I is at least one member of the group consisting of Fe, Co, Ni, and mixtures of Co and Ni; II is at least one member of the group consisting of Y, Sc, and Rare Earths, and III is at least one member of the group consisting of Hf, Zr, Cb, and Ta, the components of the alloy having essentially the following weight percents: 10–27% Cr, not more than 5–20% Al, 0.01–5% II, when I=Co, Ni or Co and Ni, III=0.5–2.0% and when I=Fe, then III=0.1–1.0%; and I=the remainder, the exposed surface of the particle being capable of developing a protective coating of Al_2O_3 at least 0.5 microns in thickness over an underlying particle substrate of at least 4% Al content.

4,139,377
FERRITIC CHROME STEELS OF HIGH NOTCHED BAR IMPACT STRENGTH AND METHOD OF MAKING SAME

Sigvard Bergh, Stockholm; Göran Gemmel, and Christer Åslund, both of Torshälla, all of Sweden, assignors to Gränges Nyby AB, Sweden

Filed Dec. 30, 1976, Ser. No. 755,805
Claims priority, application Sweden, Jan. 13, 1976, 7600152
Int. Cl.[2] B22F 3/00
U.S. Cl. 75—243 13 Claims

1. A dense, pore-free ferritic chrome steel which is distinguished in the welded state by high notched bar impact strength, characterized in that it is produced from a powder having the following composition:

max. 0.03% carbon,
max. 0.03% nitrogen,
10 to 30% chromiun,
max. 5.0% nickel,
max. 3.0% copper,
max. 1.0% silicon,
max. 2.0% manganese,
0.5 to 4.0% molybdenum
and a carbon and nitrogen-binding agent, wherein the contents of this agent must correspond at least to the stoichiometric ratio which is necessary for the formation of nitrides and carbides,
the remainder iron,

said powder having been formed by atomizing a melt of said composition under argon, said steel produced by pressing and agglomerating said powder, and working this pressed and agglomerated powder by hot or cold working into a substantially dense and pore-free semi-finished product.

7. A method of producing semi-finished products in the from of sheets by a powder metallurgical technique from stabilized ferritic chrome steels, which are distinguished by being fine grained and having in the welded state high notched bar impace strength and low transition temperature, comprising atomizing melts of the chrome steels under argon to produce a powder having the following composition:

max. 0.03% carbon,
max. 0.03% nitrogen,
max. 10 to 30% chromium,
max. 5.0% nickel,
max. 3.0% copper,
max. 1.0% silicon,
max. 2.0% manganese,
0.5 to 4.0% molybdenum
and a carbon and nitrogen-binding agent, wherein the contents of this agent must correspond at least to the stoichiometric ratio which is necessary for the formation of nitrides and carbides,
the remainder iron,

pressing and agglomerating said powder, and working this pressed and agglomerated powder by hot or cold working into substantially dense and pore-free semi-finished product form.

12. A method of producing semi-finished products by a powder metallurgical technique from stabilized ferritic chrome steels, which are distinguished by being fine grained and having in the welded state high notched bar impact strength and low transition temperature, comprising atomizing melts of a chrome steel of the composition:

0.03% carbon,
17% chromium,
2.4% molybdenum,
0.6% titanium,
0.03% nitrogen,
0.02% oxygen,
the remainder iron,

pressing and agglomerating said powder, and working this pressed and agglomerated powder by hot or cold working into the substantially dense and pore-free semi-finished product form.

4,139,378
POWDER-METALLURGY OF COBALT CONTAINING BRASS ALLOYS

Richard S. Bankowski, Whitehall, and Kermit E. Geary, Walnut Port, both of Pa., assignors to The New Jersey Zinc Company, Bethlehem, Pa.

Continuation of Ser. No. 417,982, Nov. 21, 1973, abandoned.
This application Oct. 28, 1977, Ser. No. 846,298
Int. Cl.[2] B22F 7/00; C22C 9/04
U.S. Cl. 75—247 10 Claims

1. A sintered brass compact containing cobalt and exhibiting substantially decreased shrinkage upon sintering in the order of at least about 40% improvement as compared to a comparable non-cobalt containing brass compact, and formed from a powder composition consisting essentially of about 25% to about

45% zinc, about 2% to about 7% cobalt, the balance being essentially copper.

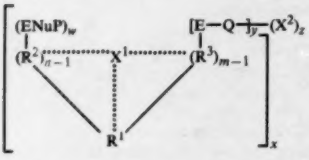
4,139,379

PHOTOGRAPHIC ELEMENTS CONTAINING BALLASTED ELECTRON-ACCEPTING NUCLEOPHILIC DISPLACEMENT COMPOUNDS

Richard A. Chasman, Hilton; Richard P. Dunlap, Macedon, and Jerald C. Hinshaw, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 775,025
Int. Cl.[2] G03C *7/00, 5/54, 1/40, 1/48*
U.S. Cl. 96—3 **106 Claims**

74. An image-transfer process comprising contacting an imagewise-exposed photographic element with an alkaline processing composition in the presence of an electron-transfer agent which is a silver halide developer, wherein said photographic element comprises at least one layer containing a silver halide emulsion having associated therewith an electron donor and a BEND compound having the formula:



where w, x, y, z, n and m are positive integers of 1 or 2; ENuP is an electron-accepting nucleophilic precursor group; R^1 is an organic group providing a cyclic group to which ENuP and E are attached optionally through R^2 and R^3; R^2 and R^3 are bivalent organic groups containing from 1–3 atoms in the bivalent linkage; E and Q provide an electrophilic cleavage group where E is an electrophilic group and Q is a group providing a monoatom linkage between E and X^2 and which can be displaced from E by the nucleophilic group provided by ENuP, wherein said monoatom is a nitrogen atom, an oxygen atom or a sulfur atom; X^1 is a substituent on at least one of R^1, R^2 and R^3, and one of X^1 or $Q—X^2$ is a ballasting group of sufficient size to render said compound immobile in an alkali-permeable layer of a photographic element and one of X^1 and $Q—X^2$ is an image dye-providing material; said process being carried out under conditions where (a) said electron-transfer agent develops said silver halide as a function of exposure to provide oxidized electron-transfer agent, (b) said oxidized electron-transfer agent reacts with said electron donor to destroy an imagewise pattern of electron donor, (c) the inverse pattern of electron donor remaining transfers electrons to the BEND compound, reducing it to provide a nucleophilic group on said BEND compound, (d) said reduced BEND compound undergoes intramolecular nucleophilic displacement of the diffusible image dye-providing moiety, and (e) said diffusible image dye-providing moiety is transferred away from its original location.

75. An image-transfer process according to claim **74** wherein said photographic element comprises an alkali-permeable layer containing a blue-sensitive silver halide having associated therewith a BEND compound of said formula wherein $—Q—X^2$) is a diffusible yellow-dye moiety, an alkali-permeable layer containing a green-sensitive silver halide having associated therewith a BEND compound of said formula wherein $—Q—X^2$) is a diffusible magenta-dye moiety, and an alkali-permeable layer containing a red-sensitive silver halide having associated therewith a BEND compound of said formula wherein $—Q—X^2$) is a diffusible cyan-dye moiety.

4,139,380

ELECTROPHOTOGRAPHIC SENSITIVE MATERIAL WITH RUBBER INTERLAYER

Minoru Matsuo, and Katutoshi Endo, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 6, 1976, Ser. No. 747,414
Claims priority, application Japan, Dec. 10, 1975, 50-147191
Int. Cl.[2] G03G *5/08, 5/14*
U.S. Cl. 96—1.5 R **10 Claims**

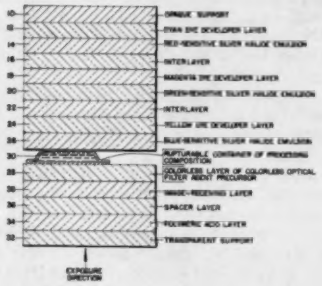
1. An electrophotographic photosensitive member, comprising: an electrically conductive support; an intermediate layer directly overlying and adhered to a surface of said support, said intermediate layer consisting essentially of a rubber component selected from the group consisting of chloroprene rubber, nitrile rubber and blend thereof, said intermediate layer optionally containing up to less than 20% by weight of carbon black; and a photoconductive layer directly overlying and adhered to said intermediate layer, said photoconductive layer consisting mainly of selenium or selenium compound.

4,139,381

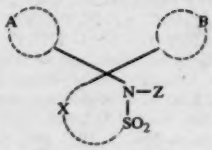
PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING pH SENSITIVE FILTER DYES

Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,006
Int. Cl.[2] G03C *7/00, 1/40, 1/84, 5/54*
U.S. Cl. 96—3 **53 Claims**



1. A process which comprises the steps of exposing a photosensitive film unit comprising a plurality of layers including at least a support carrying a photosensitive silver halide layer, and a substantially colorless optical filter agent precursor activated at an alkaline pH to form a colored optical filter agent disposed in at least one of said layers in a position effective to prevent undesired exposure of said photosensitive layer during processing in the presence of incident light, said colored optical filter agent after a predetermined time at a predetermined alkaline pH forming a substantially colorless compound different from and non-reversible to either said precursor or said filter agent by pH change, contacting said photosensitive layer and said precursor with an aqueous processing composition having an alkaline pH at least as high as said predetermined alkaline pH to initiate development and effect formation of said optical filter agent and maintaining the pH of said processing composition in contact with said optical filter agent at least as high as said predetermined alkaline pH at least until said colored optical filter agent has been converted to said colorless compound, said colorless optical filter agent precursor being a compound of the formula



wherein A is a 4'-hydroxy-1'-phenyl moiety or a 4'-hydroxy-1'-naphthyl moiety; B is a phenyl moiety or a naphthyl moiety, provided A is said 4'-hydroxy-1'-phenyl moiety when B is said naphthyl moiety; X represents the carbon atoms necessary to complete a ring-closing moiety selected from a 2,3-dihydrobenz[d]isothiazole-1,1-dioxide moiety and a 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide moiety; and Z is a carbonyl moiety containing a

group bonded to the N atom of said ring-closing moiety that undergoes an irreversible cleavage reaction in alkaline solution above a predetermined alkaline pH.

5. A process as defined in claim 1 which comprises, in combination, the steps of:

(a) exposing a photosensitive film unit comprising a plurality of layers including an opaque support carrying a photosensitive silver halide layer having associated therewith an image-providing material, an image-receiving layer adapted to receive solubilized image-providing material diffusing thereto, and said colorless optical filter agent precursor disposed in at least one of said layers in a position effective to prevent undesired exposure of said photosensitive layer during processing in the presence of incident light;

(b) contacting said photosensitive layer and said precursor with an aqueous processing composition having an alkaline pH at least as high as said predetermined pH;

(c) effecting thereby development of said silver halide layer and formation of said optical filter agent;

(d) maintaining the pH of said processing composition in contact with said optical filter agent at least as high as said predetermined alkaline pH at least until said colored optical filter agent has been converted to said colorless compound;

(e) forming as a result of said development, an imagewise distribution of diffusible image-providing material as a function of the point-to-point degree of exposure; and

(f) transferring, by diffusion, at least a portion of said imagewise distribution of diffusible image-providing material to said layer adapted to receive said material to provide a transfer image thereto.

6. A process as defined in claim 5 which includes the step of maintaining said film unit intact subsequent to said processing.

9. A process as defined in claim 6 wherein said photosensitive film unit includes, in combination, at least a first support carrying in order at least one silver halide layer, each said silver halide layer having associated therewith a dye image-providing material; a dyeable image-receiving layer; means for providing a light-reflecting layer between said image-receiving layer and said silver halide layer(s) to mask said silver halide layer(s) after development thereof and to provide a white background for viewing a transfer image in said image-receiving layer; a transparent support through which said transfer image in said image-receiving layer may be viewed; a rupturable container providing an aqueous alkaline processing composition for developing said silver halide layer(s) after photoexposure and for forming said transfer image in said image-receiving layer; and said colorless optical filter agent precursor positioned in the silver halide layer outermost from said first support, in said image-receiving layer or in a processing composition permeable layer positioned between said outermost silver halide layer and said image-receiving layer or in a combination of said layers, said alkaline processing composition having an alkaline pH at least as high as said predetermined pH.

4,139,382

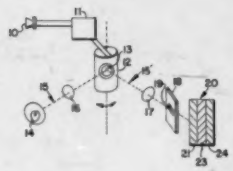
PHOTOGRAPHIC SOUND REPRODUCTION USING SILVER DIFFUSION TRANSFER

Robert K. Stephens, Windham, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 27, 1977, Ser. No. 864,596

Int. Cl.[2] G03C *7/24, 7/00, 5/14;* G11B *7/24*

U.S. Cl. 96—3 **16 Claims**



1. A method for photographically recording and reproducing sound which comprises:

modulating illumination in sympathy with the frequency and amplitude of a pattern of sound waves;

moving across the path of said modulated illumination a film unit comprising a transparent support having disposed on one surface thereof a plurality of layers including a layer comprising silver precipitating nuclei and a layer comprising photosensitive silver halide, to expose said photosensitive silver halide to said illumination and form therein a latent image defining a sound track;

contacting said photosensitive silver halide of said film unit with an aqueous processing composition containing a silver halide developing agent to develop said latent image and a silver halide solvent to react with unexposed and undeveloped silver halide to obtain a soluble silver complex which is transported by diffusion transfer to said silver precipitating nuclei containing layer where the silver of said complex is precipitated in said layer to provide a positive silver projection image defining said sound track; and

moving said positive silver projection image across the path of a constant intensity beam of light to vary the intensity of said beam of light incident on photoelectric means coupled with sound-reproduction means to thereby reproduce said pattern of sound waves.

4,139,383

DYE DIFFUSION TRANSFER EMPLOYING PYRIDINE AZO DYE

Heinrich Odenwälder, Cologne; Walter Puschel, Leverkusen, and Rudolf Stolzenburg, Düsseldorf, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 851,107

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1976, 2652463

Int. Cl.[2] G03C *7/00, 5/54, 1/40, 1/10*

U.S. Cl. 96—29 D **3 Claims**

3. Photographic dye diffusion transfer process for the production of color images comprising the steps of

(a) imagewise exposing a photographic material having at least one light-sensitive silver halide emulsion layer and associated therewith a non-diffusible color providing compound

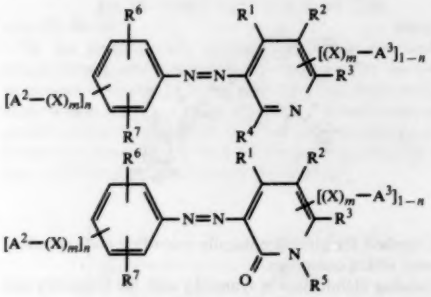
(b) developing the material to produce therein metallic silver and developer oxidation products in image distribution

(c) oxidizing said non-diffusible color providing compound with said developer oxidation products to provide image distributions of oxidized and non-oxidized color providing compound,

(d) releasing under alkaline development conditions a diffusible dye either from said oxidized or said non-oxidized color providing compound and

(e) transferring the diffusible dye to an image receiving layer to provide an image therein

wherein the improvement comprises the non-diffusible color providing compound has one of the following formulae II and III



II

III

in which

A^2 represents an oxidizable organic carrier residue in the o-, m- or p-position to the azo group, which residue may be attached by way of a connecting member X and contains a group which confers diffusion resistance, from which carrier residue, either in its oxidized or in its unoxidized form, a part thereof together with the group which confers diffusion resistance is split off under the alkaline photographic development conditions, a diffusible azo dye being released imagewise at the same time;

A^3 represents an oxidizable organic carrier residue contained in one of the substituents R^1, R^2, R^3 and R^5, which carrier residue contains a group which confers diffusion resistance and may be attached through a connecting member X, from which carrier residue, either in its oxidized form or in its unoxidized form, a part thereof together with the group which confers diffusion resistance is split off under alkaline photographic development conditions, a diffusible azo dye being released imagewise at the same time;

X represents a bivalent connecting member having the formula $R-(L)_p-(R)_q$, in which R represents an alkylene group having up to 6 carbon atoms or a phenylene group, the two groups R being either the same or different;

L represents —O—, —CO—, —$CONR^8$—, —SO_2NR^8—, —O—CO—NH^8— —SO_2—, —SO— or —S— (R^8 = hydrogen or alkyl);

p = 0 or 1;

q = 0 or 1 and q = 1 when p = 1;

m,n = 0 or 1;

R^1 represents hydrogen, alkyl, aralkyl or aryl;

R^2 represents hydrogen or an electron attracting group selected from the group consisting of —CN, —COOH, —SO_3H, —$CONHR^8$, —SO_2—NHR^8 (R^8 = hydrogen or alkyl) and - —$[SO_2-(X)_m]_o-A^3$;

R^3 represents a hyroxyl group or an amino group;

R^4 represents hydrogen, a hydroxyl group or an amino group;

R^5 represents hydrogen, alkyl, aralkyl or aryl;

R^6 represents hydrogen, alkyl or —NO_2;

R^7 represents hydrogen, halogen, alkoxy, an acylamino group in which the acyl group is derived from an aliphatic or aromatic carboxylic or sulphonic acid, sulphamoyl, carbamoyl, alkylsulphonyl, arylsulphonyl, trihalogen methyl or cyano.

4,139,384

PHOTOSENSITIVE POLYMERIC O-QUINONE DIAZIDE CONTAINING LITHOGRAPHIC PRINTING PLATE AND PROCESS OF USING THE PLATE

Masayuki Iwasaki; Hiroshi Misu, both of Minami-ashigara, and Shizuo Miyano, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

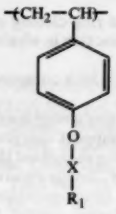
Continuation of Ser. No. 551,813, Feb. 21, 1975, abandoned. This application Apr. 21, 1977, Ser. No. 789,587

Claims priority, application Japan, Feb. 21, 1974, 49-20925

Int. Cl.[2] G03F 7/08; G03C 1/54, 1/70

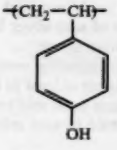
U.S. Cl. 96—33 **16 Claims**

1. A photosensitive lithographic printing plate which comprises a support having thereon a photosensitive layer comprising an o-quinonediazide group containing photosensitive polymer, said polymer containing, as essential components, monomer repeating units represented by the following general formulae (A) and (B), and having a molecular weight of 1,000 to 300,000, the amount of the photosensitive layer on said support ranging from about 0.1 to about 5 g/m^2,



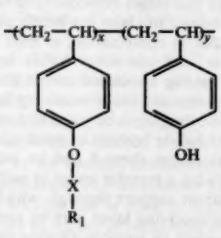
General Formula (A)

wherein X represents a sulfonyl group, and R_1 represents an aromatic o-quinonediazide group, with the aromatic group of the o-quinone-diazide group being unsubstituted or substituted with an alkyl group or an alkoxy group,



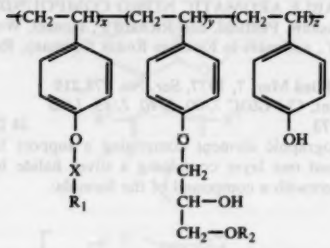
General Formula (B)

6. A photosensitive lithographic printing plate which comprises a support having thereon a photosensitive layer comprising an o-quinonediazide group-containing photosensitive polymer having a structure represented by the following general formula (I) or (II) and having a molecular weight of 1,000 to 300,000, the amount of the photosensitive layer on said support ranging from about 0.1 to about $5g/m^2$,



(I)

wherein X represents a sulfonyl group, R_1 represents an aromatic o-quinonediazide group, with the aromatic group of the o-quinonediazide group being unsubstituted or substituted with an alkyl group or an alkoxy group, and x and y each represent the molar proportions of the respective structural units and x/x+y ranges from about 0.05 to about 0.5,



(II)

wherein X and R_1 have the same meanings as in General Formula (I), R_2 represents an alkyl group, an aryl group or an alkyl or aryl group substituted with an o-quinonediazide group, and x, y and z each represent the molar proportions of the respective structural units and x/x+y+z ranges from about 0.05 to about 0.5 and y/x+y+z ranges from about 0.05 to about 0.2.

4,139,385

COATING METHOD AND COMPOSITION USING CATIONIC PHOTOINITIATORS POLYTHIO COMPONENTS AND POLYOLEFIN COMPONENTS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 588,636, Jun. 20, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,327

Int. Cl.[2] G03C *1/68*

U.S. Cl. 96—35.1 **10 Claims**

1. A UV curable composition substantially free of a free radical inhibitor consisting essentially of

(A) A polyolefin component having the formula,

$$[A]-[D]_x,$$

where x is an integer having a value of at least 2, A is a polyvalent organic radical or an organisilicon radical free of reactive olefinic unsaturation and consisting essentially of chemically combined atoms selected from the class consisting of carbon, oxygen, nitrogen, phosphorous, silicon and mixtures thereof in combination with monovalent atoms selected from the class consisting of chlorine, bromine, fluorine and hydrogen and D is an olefinically unsaturated monovalent organic radical,

(B) a polythio component having the formula,

$$G-(SH)_y,$$

where G is a polyvalent organic radical free of aliphatic unsaturation and y is an integer having a value of at least 2, and

(C) from 0.25% to 10% by weight of the UV curable composition, of a photodecomposable cationic photoinitiator of the formula,

$$(Y^+)_j\,(MX_k)^{-(k-l)},$$

where M is a metal or metalloid and Y^+ is a cation selected from the class consisting of

$$[(R)_a\,(R^1)_b\,I]^+,$$

$$[(R)_c\,(R^2)_d\,(R^3)_e\,S]^+,$$

and

$$[(R)_f\,(R^4)_g\,(R^5)_h\,Z]^+,$$

R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, R^2 is a monovalent organic aliphatic radical selected from alkyl, cycloalkyl and substituted alkyl, R^3 is a polyvalent organic radical forming a heterocyclic or fused ring structure selected from aliphatic radicals and aromatic radicals, R^4 is a monovalent organic aliphatic radical selected from alkyl, alkoxy, cycloalkyl and substituted derivatives thereof, R^5 is a polyvalent organic radical forming an aromatic heterocyclic or fused ring structure, X is a halogen radical selected from the class consisting of I, Br, Cl and F, Z is a Group Va element selected from the class consisting of N, P, As, Sb, and Bi, a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, the sum of a + b is equal to 2 or the valence of I, c is a whole number equal to 0 or 3, d is a whole number equal to 0 or 2 inclusive, e is a whole number equal to 0 or 1, and the sum of c + d + e is a value equal to 3 or the valence of S, f is a whole number equal to 0 to 4, g is a whole number equal to 0 to 2 inclusive, h is a whole number equal to 0 to 2 inclusive, and the sum of f + g + h is a value equal to 4 or the valence of Z,

j = k − l

l = valence of M and is an integer equal to 2 to 7 inclusive and

k>l and is an integer having a value up to 8.

4,139,386

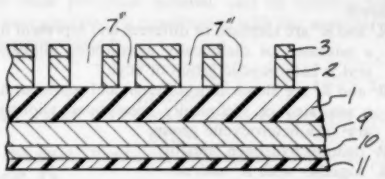
METHOD FOR OBTAINING ENGRAVERS TEMPLATE

John V. Stewart, Watchung, N.J., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 8, 1976, Ser. No. 748,428

Int. Cl.[2] G03C *5/00, 11/00*

U.S. Cl. 96—36 **8 Claims**



1. A method for obtaining an engravers template having a desired pattern therein with engraved portions and raised portions comprising:

(a) providing a composite sheet having a plastic layer bonded between a first and second metal sheet, said metal sheets having oxide layers on the sides thereof opposite said plastic layer;

(b) covering the oxide layer on said first sheet with a photo resist layer, and covering the oxide layer on said second sheet with a readily removable plastic layer;

(c) applying a positive transparency of the desired pattern to the surface of the photo resist layer;

(d) exposing the photo resist layer of ultraviolet light through the positive transparency to harden the photo resist layer where the ultraviolet light passes through the positive transparency and leave the photo resist layer unhardened where the ultraviolet light does not pass through the positive transparency;

(e) developing the photo resist layer to remove the unexposed or unhardened areas of the photo resist layer from the surface of said oxide layer;

(f) first etching away said oxide layer in the areas where the photo resist layer has been removed;

(g) deep etching the metal sheet under the etched oxide layer to form the engraved pattern; and

(h) removing the readily removable plastic layer after completion of the etching steps wherein said readily removable plastic layer protects the oxide layer on said second sheet during the etching steps.

4,139,387

PROCESS FOR THE PRODUCTION OF DIRECT-POSITIVE PHOTOGRAPHIC IMAGES

Anita von König, Krefeld; Heinrich Odenwälder, Cologne; Manfred Peters, and Walter Püschel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

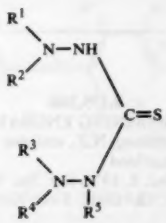
Filed Nov. 3, 1977, Ser. No. 848,095

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746965

Int. Cl.[2] G03C 5/24, 1/28

U.S. Cl. 96—64 6 Claims

1. A process for the production of direct-positive photographic images in which a photographic recording material having at least one light-sensitive silver halide emulsion layer which contains an unfogged direct-positive silver halide emulsion is exposed imagewise and developed in the presence of a fogging agent, wherein the improvement comprises the material contains from 0.1 to 100 mg per mol of silver halide of a fogging agent represented by the following general formula:



wherein

R^1 and R^4 are identical or different and represent hydrogen, a saturated or olefinically unsaturated aliphatic group, aryl, a heterocyclic group or acyl;

R^2 and R^3 are identical or different and represent hydrogen, a saturated or olefinically unsaturated aliphatic group, aryl or a heterocyclic group;

R^5 denotes hydrogen, and/or

R^1 together with R^2 and/or

R^3 together with R^4 represent a methylidene group optionally substituted by alkyl, aryl, a heterocyclic group or by acyl, wherein two such substituents together with the carbon atom of the methylidene group may complete a carbocyclic or heterocyclic ring; and/or

R^1 together with R^4 or R^5 represent the group required for completing a 5-membered or 6-membered heterocyclic ring selected from the group consisting of 1,2,3,4-tetrazolidine-5-thione, hexahydro-1,2,4,5-tetrazine-3-thione, hexahydro-1,2,4-triazine-3-thione and 2,3,4,5-tetrahydro-1,2,4-triazine-3-thione.

4,139,388

HOLOGRAPHIC RECORDING MEDIUM CONTAINING A 2-CYANOACRYLATE POLYMER

Shymon Reich, and Albert A. Friesem, both of Rehovot, Israel, assignors to Yeda Research and Development Company, Ltd., Rehovot, Israel

Filed Nov. 4, 1975, Ser. No. 628,752

Claims priority, application Israel, Dec. 2, 1974, 46164

Int. Cl.[2] G03C 1/76, 1/68

U.S. Cl. 96—67 7 Claims

1. A photosensitive recording medium for recording spatially modulated optical data and for the recording of holograhic information in real time, comprising a polymeric sheet comprising a lower alkyl 2-cyanoacrylate polymer containing a photosensitizer adapted to bring about a change of refractive index, upon irradiation in the visible or UV range, of a degree sufficient to permit recording spatially modulated optical data and recording of holographic information in real time, said photosensitizer comprising p-benzoquinone.

4,139,389

CLEAVABLE AROMATIC NITRO COMPOUNDS

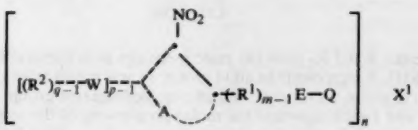
Jerald C. Hinshaw, Penfield, and Richard P. Henzel, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1977, Ser. No. 775,219

Int. Cl.[2] G03C 7/00, 1/40, 1/48, 1/76

U.S. Cl. 96—73 24 Claims

1. A photographic element comprising a support having thereon at least one layer containing a silver halide having associated therewith a compound of the formula:



where A represents a group containing the atoms necessary to form a 5- to 6-membered aromatic ring with the remainder of said formula; W is an electron-withdrawing group having a positive Hammett sigma value; R^2 is a hydrogen atom, an alkyl group or an aryl group; R^1 is a bivalent organic group containing from 1–3 atoms in the bivalent linkage; m and q are positive integers of 1 or 2; p is a positive integer of 1 or greater, and p is 1 only when A contains an aromatic 'onium group, and when p is 2, the substituent $[(R^2)_{q-1}W]$ is ortho or para to the nitro group on said formula; E and Q provide an electrophilic cleavage group where E is an electrophilic center, and Q is a bivalent group providing a monoatom linkage between E and X^1 wherein said bivalent group is a nonmetallic atom with a negative valence of 2 or 3 from Groups VA and VIA of the periodic table; n is an integer of 1-3; and X^1, together with Q, is either an image dye-providing material or a photographic reagent.

4,139,390

PRESENSITIZED PRINTING PLATE HAVING A PRINT-OUT IMAGE

Frederick J. Rauner; Michael P. Cunningham, and Richard C. Van Hanehem, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

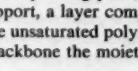
Filed Feb. 10, 1977, Ser. No. 767,273

Int. Cl.[2] G03C 1/68

U.S. Cl. 96—91 N 15 Claims

1. A presensitized light-sensitive plate suitable for the production of a lithographic printing plate, comprising a support and applied to the support, a layer comprising

a photocrosslinkable unsaturated polymer containing as part of the polymer backbone the moiety,

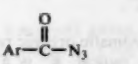


in recurring amounts sufficient to render the layer photocrosslinkable,

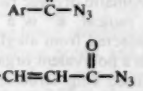
a thiazoline sensitizer for said polymer,

a leuco dye, and

a light-sensitive organic azide different from said sensitizer and capable of sensitizing said leuco dye without reducing the speed of said plate by more than one step, said azide having a formula selected from the group consisting of



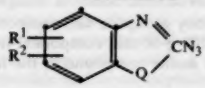
(I)



(II)

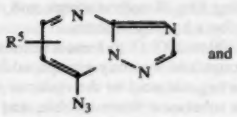
-continued

(III)



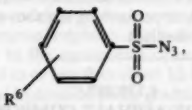
(IV)

(V)



and

(VI)



wherein Ar represents aryl; Q is selected from the class consisting of oxygen, sulfur, selenium, and a >NR radical; R is selected from the class consisting of hydrogen, alkyl, aryl, alkylsulfonyl, arylsulfonyl, alkoxy, aroyl, carbalkoxy, and carbamyl; R^1 and R^2 each is selected from the class consisting of hydrogen, alkyl, alkoxy, aryl, nitro, halogen, and the nonmetallic atoms such that when the R^1 and R^2 groups are attached to adjacent carbon atoms in the benzene ring, said R^1 and R^2 groups when taken together with said carbon atoms complete a fused cyclic ring; R^3 is selected from the class consisting of azido and alkyl; R^4 is selected from the class consisting of azido, alkyl, and amido; Z is selected from the class consisting of the →CH radical and nitrogen; R^5 is selected from the class consisting of hydrogen and alkyl; and R^6 is acyl containing from 2 to 5 carbon atoms.

4,139,391

LIGHT-SENSITIVE RESIN COMPOSITION AND METAL IMAGE-FORMING MATERIAL USING THE SAME

Tomoaki Ikeda, Asaka; Hiroshi Misu; Yoshimasa Aotani, both of Minami-ashigara, and Fumiaki Shinozaki, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 11, 1977, Ser. No. 767,865

Claims priority, application Japan, Feb. 16, 1976, 51-16302

Int. Cl.² G03C *1/68*

U.S. Cl. 96—115 R **13 Claims**

1. An alkaline developable light-sensitive resin composition containing (a) at least one ethylenically unsaturated compound having at least two terminal ethylenically unsaturated groups, which is capable of forming a polymer through photo-addition polymerization, and which has a boiling point of about 100° C. or higher at atmospheric pressure, (b) an addition polymerization initiator activatable by irradiation with actinic radiation, and (c) an organic high polymer binder having water-solubilizing groups in the side chains thereof, wherein the improvement comprises said binder being a copolymer containing (A) a repeating unit derived from at least one compound selected from the group consisting of acrylic acid and methacrylic acid and (B) a representing unit derived from at least one compound selected from the group consisting of benzyl acrylate, benzyl methacrylate, phenethyl acrylate, phenethyl methacrylate, 3-phenylpropyl acrylate, 3-phenylpropyl methacrylate, 4-phenylbutyl acrylate and 4-phenylbutyl methacrylate.

4,139,392

CHROMOGENIC HOT MELT COATING COMPOSITIONS

Gerald T. Davis; Gerhart Schwab, both of Chillicothe, Ohio, and Dale R. Shackle, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 747,682, Dec. 6, 1976, which is a continuation-in-part of Ser. No. 684,459, May 7, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,535

Int. Cl.² C09K *3/00*

U.S. Cl. 106—14.5 **8 Claims**

1. A liquid chromogenic coating composition comprising:

(a) a hot melt suspending medium, said hot melt suspending medium being water insoluble and having a melting point of from about 60° C. to about 140° C. and a melting point range of less than about 15° C., said hot melt suspending medium being characterized by the presence of one or more functional groups selected from the group consisting of: carboxyl, carbonyl, hydroxyl, ester, amide, amine, heterocyclic groups and combinations thereof, said hot melt suspending medium being further characterized by having a weight loss rating of less than about 15 mg/g/hr. at 90° C. on a thermogravimetric scale when a 20.0 mg. sample of said hot melt suspending medium is analyzed and a heat resistance characteristic as measured by typewriter intensity decline on a seven day period of less than about 15 units loss when initial typewriter intensity is less than about 75 typewriter intensity units to impart polarity thereto; and

(b) a microencapsulated chromogenic material, said chromogenic material being a color precursor of the electron donating type said chromogenic material being mixed with a carrier oil to form an oil solution of said chromogenic color precursor material, said oil solution being microencapsulated by combination with one or more wall forming compounds.

4,139,393

CERAMIC CORE FOR USE IN MAKING MOLDS AND DIES

Vijay K. Chandhok, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 406,440, Oct. 15, 1973, which is a continuation-in-part of Ser. No. 263,082, Jun. 15, 1972, abandoned. This application Apr. 28, 1977, Ser. No. 791,822

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.3 **5 Claims**

1. In the production of articles by compacting an alloy particle charge against a ceramic core having a configuration corresponding generally to the desired configuration of the article, the improvement comprising said ceramic core being constructed from an admixture comprising 80 to 98% by weight of rounded refractory oxide particles and 2 to 20% by weight colloidal silica as a binding agent.

4,139,394

LININGS FOR PUSHER OVENS

Marc Esnoult, Sorgues, and Michel Ayme-Jouve, Avignon, both of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Division of Ser. No. 642,390, Dec. 19, 1975, abandoned. This application Nov. 10, 1976, Ser. No. 740,666

Claims priority, application France, Dec. 26, 1974, 74 42842

Int. Cl.² C04B *35/48*

U.S. Cl. 106—57 **5 Claims**

1. A method for lining at least a portion of the floor of a pusher oven with a cast refractory material comprising providing a lining part of cast refractory material having

(A) a chemical composition by weight:

ZrO_2: 10% to 28%

SiO_2: 3% to 12%

Al_2O_3: 60% to 80%

at least one alkali metal oxide: 0.3% to 1.5%

Fe_2O_3, TiO_2, CaO and MgO if present not exceeding 5% in total, with the proviso that the weight ratio SiO_2/Na_2O (or equivalent other alkali metal oxide) is not more than 16;

(B) a crystallographic composition by weight:

Cordundum: 60% to 80%

Zirconia: 10% to 27%

Vitreous phase: 5% to 19%

with the provisos that

(a) the total weight of said corundum, zirconia and vitreous phase is at least 99% of the total composition,

(b) the weight of zirconia plus 2.5 times the weight of the vitreous phase is between 33% and 57.5% of the total composition, and

(c) there is less than 1 wt. % mullite in the composition and constructing at least a portion of the floor of a pusher oven with said lining parts.

4,139,395

TIRE BALANCING COMPOUND

Dorsey S. Dunlap, 136 Elm St., South Williamsport, Pa. 17701

Filed Jun. 9, 1976, Ser. No. 694,354

Int. Cl.[2] B60B *13/00*; C08L *89/00*

U.S. Cl. 106—157 **3 Claims**

1. A thixotropic tire balancing compound for insertion in the air space of a tubeless tire or inner tube which consists of a mixture of dextrin, albumin, glycerin, and sodium silicate.

4,139,396

WATER-SOLUBLE COATING COMPOSITION FOR CATHODE-PRECIPITATING ELECTRODEPOSITION AND PROCESS FOR ITS PREPARATION

Yutaka Otsuki, Yokohama; Yoshihiko Araki, Kawasaki, and Kazuho Aoyama, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,538

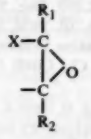
Claims priority, application Japan, Jul. 29, 1976, 51/89649; Mar. 24, 1977, 52/31624[U]

Int. Cl.[2] C08L *25/02, 31/02, 91/00*

U.S. Cl. 106—243 **2 Claims**

1. A process for producing a cathode-precipitating electrodeposition coating composition, which comprises reacting

(A) an unsaturated organic compound having a molecular weight of 300 to 30,000 containing a carbon-carbon double bond in an amount corresponding to an iodine number of 50 to 500, said unsaturated organic compound being selected from the group consisting of (a) a polymer of a conjugated diolefin containing 4 to 8 carbon atoms, (b) a copolymer of at least two conjugated diolefins containing 4 to 8 carbon stoms, (c) a copolymer of at least one conjugated diolefin containing 4 to 8 carbon atoms and a vinyl monomer having ethylenic unsaturation containing 2 to 20 carbon atoms, (d) a natural oil, (e) a natural fat and (f) a petroleum resin produced by cationic polymerization of petroleum cracking fractions containing 4 to 10 carbon atoms with a Friedel-Crafts catalyst, said unsaturated organic compound having bonded thereto, through a carbon-carbon bond, epoxy groups of the formula



wherein R_1 and R_2, independently from each other, represent hydrogen or methyl, and X represents hydrogen or a bond, and when X is a bond, the carbon atom to which R_1 is attached and the carbon atom to which R_2 is attached both may form a part of the main chain of said component (A),

the amount of said epoxy groups in said component (A) being 0.05 to 0.2 mole per 100 g of said component (A), with (B) a primary or secondary amine compound of the formula

wherein R_3 and R_4 are the same or different hydrocarbon groups containing 1 to 10 carbon atoms, and either one of R_3 and R_4 may be a hydrogen atom,

at a temperature of 100 to 200° C. to form a resinous substance containing basic groups and hydroxy groups, adding a water-soluble inorganic or organic acid to the resinous substance to render the resinous substance water-soluble, and mixing the resulting water-soluble resinous substance with an aqueous or organic liquid medium; or performing the above reaction in the presence of the liquid medium.

4,139,397

PAVING GRADE ASPHALT COMPOSITIONS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 658,958, Feb. 18, 1976, abandoned. This application May 27, 1977, Ser. No. 801,335

Int. Cl.[2] C08L *95/00*

U.S. Cl. 106—278 **9 Claims**

1. A process for producing a paving grade asphalt composition which comprises forming a slurry of coal tar having a boiling point in the range between about 700° F. and 1000° F. and a thermally stable, highly refractory petroleum solvent having a boiling point above about 650° F., an average liable hydrogen content of about 0.3 percent or more, a benzylic hydrogen (alpha) content of about 1.5 percent or more, an aromatic hydrogen content of about 2 percent or more and a content of beta, gamma and other hydrogen of about 4 percent or less; and heating the slurry admixture thus formed to a temperature in the range between about 350° F. and 850° F. for a period of time sufficient to convert the slurry admixture into a homogeneous composition exhibiting asphaltic properties at ambient temperatures and having an ASTM penetration value of 40–300 at 77° F.

5. A process for producing a ductile synthetic paving grade asphalt composition which comprises forming a slurry of coal tar having a boiling point between about 700° F. and 1000° F. and comminuted scrap rubber in a thermally stable highly refractory petroleum solvent having a boiling point above about 650° F., an average liable hydrogen content of about 0.3 percent or more, a benzylic hydrogen (alpha) content of about 1.5 percent or more and a content of beta, gamma and other hydrogen of about 4 percent or less; and heating the slurry admixture thus formed to a temperature in the range between about 350° F. and 850° F. for a period of time sufficient to convert the slurry admixture into a homogeneous composition stable, asphaltic properties at ambient temperatures and having an ASTM penetration value of 40–300 at 77° F.

4,139,398

PROCESS FOR PREPARING A RED IRON OXIDE PIGMENT

Tullio Pellizzon, Paderno Dugnano (Milan); Luigi Piccolo, and Peter Schwarz, both of Milan, all of Italy, assignors to Euteco S.p.A., Sassari, Italy

Filed Nov. 29, 1977, Ser. No. 856,769

Claims priority, application Italy, Jan. 11, 1977, 19154 A/77

Int. Cl.[2] C09C *1/24*

U.S. Cl. 106—304 **16 Claims**

1. A process for preparing a red Fe_2O_3 iron oxide pigment in the form of spherical particles with an average sphere size of

0.1–0.4 microns, starting from ferrous sulphate, an inorganic base and an organic aromatic derivative, comprising:

(a) in a first stage, bringing into contact aqueous ferrous sulphate solution, aqueous alkali metal hydroxide and an aromatic nitro-derivative, with a molar ratio of alkali metal hydroxide to ferrous sulphate equal to or less than 1:1 and a molar ratio of moles of said alkali metal hydroxide to equivalents of aromatic nitro-derivative equal to or less than 12:1, and operating at a temperature between 85° C. and the boiling point of the reaction mixture at atmospheric pressure and at a pH equal to or less than 7.5 for a time at least equal to the time required for forming a suspension of nuclei with a solids content, evaluated as Fe_2O_3, of not greater than 40g/liter;

(b) in a second reaction stage, mixing together an aqueous solution of ferrous sulphate, an organic nitro-derivative and iron oxide pigment nuclei from the first stage, and while operating at a temperature between 85° C. and the boiling point of the reaction mixture at atmospheric pressure feeding into the mixture aqueous alkali metal hydroxide up to a maximum of approximately 2 moles for each mole of ferrous sulphate, the ratio of moles of alkaline hydroxide to the equivalents of organic nitro-derivative being equal to or less than about 12:1, said feed of aqueous alkali metal hydroxide being gradual in order to maintain in the reaction medium a pH between 6.0 and 7.5, whereby a suspension of the Fe_2O_3 iron oxide pigment with a solids content, evaluated as Fe_2O_3, of not greater than 110g/liter is formed, the amount of the nuclei from the first stage being 3 to 15 parts by weight for every 100 parts by weight of the precipitate in the second stage;

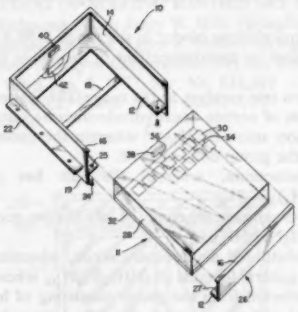
(c) recovering the pigmentary iron oxide and the resultant aromatic amine from the reaction products of the second stage.

4,139,399

SOLAR PANEL WITH REMOVABLE CELL MATRIX, AND METHOD OF MAKING SAME

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Filed Jan. 18, 1978, Ser. No. 870,506
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 H **7 Claims**



1. A solar panel for maintaining photovoltaic cells in position to receive and absorb light impinging thereon, comprising a frame and a matrix in the form of a solid body of hardened resin encapulating said cells and maintaining them in spaced, light-receiving position, said frame having a surface contoured to receive said resin body therein, said frame including retaining means movable between an open position in which said matrix can be received or released from said contoured surface and a closed position in which said matrix is firmly held at said contoured surface.

5. A method of manufacturing a solar panel, comprising disposing photovoltaic cells in a fluid body of resin capable of hardening and encapsulating the cells, hardening said resin to form a said matrix of predetermined shape having disposed therewithin a plurality of cells secured in spaced, light-receiving position, and inserting said matrix in a frame having a surface contoured to receive and retain said matrix thereat.

4,139,400

SUPERPLASTIC ALUMINIUM BASE ALLOYS

Clive G. Bennett, Georgetown, Australia, assignor to Comalco Aluminium (Bell Bay) Limited, Tasmania, Australia

Filed Jun. 23, 1975, Ser. No. 589,707
Claims priority, application Australia, Jun. 27, 1974, 7997/74
Int. Cl.² C22C *21/00*
U.S. Cl. 148—32 **6 Claims**

1. A process for preparing an aluminum base alloy having an ultra fine fully modified eutectic microstructure which comprises forming a liquid melt of composition as hereinafter set forth, and allowing said melt to solidify under controlled conditions such that the rate of growth of the solid phase during solidification is 1000 – 2000 microns/sec and the temperature gradient of the solid/liquid interface is from 100°–250° C./cm, thereby to produce an alloy characterized by the absence of any primary phase and the presence of a high volume fraction of dispersed eutectic phase in the form of fibrous fully modified particles of size less than 10 microns; said composition being:

Element	%
Mn	2 – 6
Si	0 – 1
Cu	0 – 2
Fe	0 – 3
Mg	0 – 4
Al	Remainder, apart from impurities.

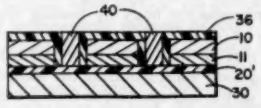
4. Aluminum-manganese alloys prepared by the process of claim 1.

4,139,401

METHOD OF PRODUCING ELECTRICALLY ISOLATED SEMICONDUCTOR DEVICES ON COMMON CRYSTALLINE SUBSTRATE

Donald A. McWilliams, Placentia; Charles H. Fa, Costa Mesa; George A. Larchian, Northridge, and Oral F. Maxwell, Jr., Santa Ana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 339,717, Jan. 23, 1964, abandoned. This application Apr. 26, 1968, Ser. No. 725,223
Int. Cl.² H01L *21/76, 27/12*
U.S. Cl. 148—175 **24 Claims**



1. A method of making an integrated circuit structure having circuit devices in semiconductor islands which are isolated from each other by insulating material, said method including

the steps of: selectively removing semiconductor material from one side of a monocrystalline semiconductor element about regions thereof where said islands are to be formed to form recesses surrounding the islands, applying insulating material to said one side of said element to a thickness which is insufficient to fill the recesses surrounding the islands and applying material of a type differing from said insulating material to fill the recesses surrounding the islands and to cover said one side to form a supporting substrate for said islands, removing enough semiconductor material from the entire side of said semiconductor element opposite said one side to expose said insulating material at said opposite side while leaving monocrystalline semiconductor islands of a desired thickness available at said opposite side, and fabricating circuit devices in said islands.

4,139,402

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING DOPED OXIDES AND CONTROLLED OXIDATION

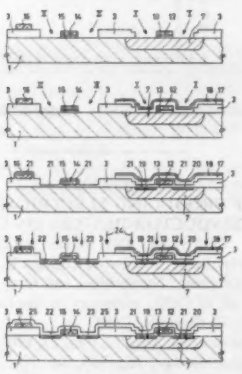
Walter Steinmaier, Langnau, and Jose Solö de Zaldivar, Wädenswill, both of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,029

Claims priority, application Netherlands, May 11, 1976, 7604986

Int. Cl.[2] H01L *21/225, 29/78*

U.S. Cl. 148—188 **12 Claims**



1. A method of manufacturing a semiconductor device which comprises the steps of:

providing a semiconductor body;

providing a diffusion masking layer on a surface of said semiconductor body;

providing at least one aperture in said masking layer;

providing an oxide doping layer having a high dopant concentration on the semiconductor surface at least within said aperture;

diffusing said dopant from the oxide doping layer, through the aperture and into the semiconductor body to form a shallow doped zone having different conductivity properties than those of the adjoining semiconductor material of the semiconductor body by heating the semiconductor body in an oxidizing atmosphere in a first heating step to diffuse part of the dopant from said oxide doping layer into said body while oxidizing the semiconductor surface at least within said aperture to form a weakly doped thermal oxide layer thereon to limit the further diffusion of said dopant from the oxide doping layer into the semiconductor body and thereby limit the growth of said shallow doped zone, the oxide doping layer containing a sufficiently high dopant concentration to have a higher etch rate than that of either the diffusion masking layer or the thermal oxide layer;

removing the oxide doping layer by an etching process without using an etching mask, the diffusion masking layer and the thermal oxide layer being removed at most over only a part of their thickness by said etching process; and

further diffusing said dopant into the semiconductor body by again heating said body in a second heating step.

4,139,403

DINITROALKYL AND FLUORODINITROALKYL SILICON COMPOUNDS

Kurt Baum, Pasadena; Duane A. Lerdal, Sierra Madre, and Jerald S. Horn, Granada Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1977, Ser. No. 826,212

Int. Cl.[2] C07F *7/10*

U.S. Cl. 149—88 **17 Claims**

1. A compound of the formula

$$(R_1)_3\,Si\,R_2\,CF\,(NO_2)_2$$

wherein the R_1 groups may be the same or different and are C_6H_5 or CH_3; and R_2 is $(CH_2)_2$,$(CH_2)_3$, or CH_2OCH_2

2. An explosive composition comprising a compound of claim 1.

4,139,404

ACTIVE BINDER PROPELLANTS INCORPORATING BURNING RATE CATALYSTS

Terrence P. Goddard, Aptos, and Donald N. Thatcher, Hollister, both of Calif., assignors to Teledyne McCormick Selph, Hollister, Calif.

Continuation-in-part of Ser. No. 592,449, Jul. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 585,216, Jun. 6, 1975, abandoned. This application Jun. 15, 1976, Ser. No. 696,324

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.[2] C06B *45/10*

U.S. Cl. 149—19.2 **17 Claims**

1. An active binder propellant composition comprising, by weight:

(A) a nitrocellulose binder in the range 8–99.9 percent;

(B) oxidizer or monopropellant in the range 0–60 percent; and

(C) a burn rate catalyst, in the range 0.01–20 percent, which consists of certain decahydrodecaborate salts, having the common anion $B_{10}H_{10}^{-2}$ wherein the cation is selected from the group consisting of:

(i) ammonium, wherein the salt has the formula $(NH_4)_2B_{10}H_{10}$;

(ii) hydrazinium, wherein the salt has the general formula $(NH_2NH_3)B_{10}H_{10}$;

(iii) substituted ammonium cations, wherein the salt has the general formula $(R_3NH)_2B_{10}H_{10}$, wherein further R is selected from the group consisting of hydrogen and alkyl radicals containing less than six carbon atoms;

(iv) substituted hydrazinium cations, wherein the salt has the general formula $(R_2NNR_2H)_2B_{10}H_{10}$ wherein further R is selected from the group consisting of hydrogen and alkyl radicals containing less than six atoms,

wherein said burn rate catalyst is further the resultant product of a coprecipitation of one of said group of decahydrodecaborate salts, and a solid oxidizing agent, by the process of:

(i) dissolving both the decahydrodecaborate (−2) salt and the solid oxidizing agent in a mutually soluble solvent, at a temperature sufficiently high to maintain said salt and said oxidizing agent in solution;

(ii) forming a pressurized stream of said solution and

bringing said solution stream together with a pressurized stream of a miscible nonsolvent, under conditions of extreme turbulence within a mixing chamber, to effect a substantially complete coprecipitation;

(iii) recovering the coprecipitated product by filtering the effluent from said mixing chamber, and washing said product with an inert and nonsolvent fluid;

(iv) drying the product to remove all remaining fluid.

4,139,405

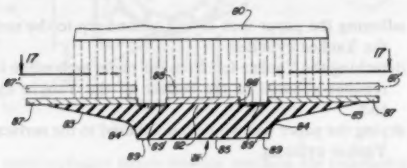
SELECTIVE ELECTRON IRRADIATION PRECURING OF TREADS IN TIRE MAKING PROCESSES

Theophilus K. Seiberling, Akron, Ohio, assignor to Mildred Kelley Seiberling, Akron, Ohio, a part interest

Continuation-in-part of Ser. No. 627,136, Oct. 30, 1975, abandoned, which is a continuation of Ser. No. 395,346, Sep. 7, 1973, Pat. No. 3,933,553, which is a continuation of Ser. No. 321,421, Jan. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 838,512, Jul. 2, 1969, abandoned. This application Jul. 6, 1976, Ser. No. 702,623

Int. Cl.[2] B29H *17/36*

U.S. Cl. 156—128 R **18 Claims**



1. A process for making a tire, in which, before complete curing of the tire, the tread stock of the tire, which is curable by electron irradiation, is partially precured at least at one location by exposure to electron irradiation or other irradiation having the same curing effect on the tread stock, in a controlled manner utilizing appropriate shielding such that thick portions of the tread stock receive a greater degree of precuring than thinner portions, and as a result the total curing time of the completely assembled tire is reduced.

4,139,406

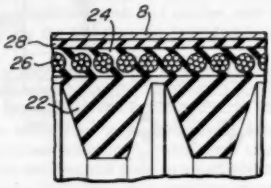
METHOD OF MAKING BANDED BELTS

Kenneth D. Richmond, Nixa; Jerry W. Hill, Springfield; Joseph P. Regan, Springfield, and Walter E. Huber, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Sep. 8, 1977, Ser. No. 831,567

Int. Cl.[2] B29D *29/02;* **B29H** *7/22*

U.S. Cl. 156—140 **13 Claims**



1. A process for making a belt comprising a compression section, a load-carrying section and a tension section, said compression section having a plurality of laterally spaced longitudinally extending ribs, which comprises the steps of:

a. Fabricating a belt sleeve of an inner compression layer of uncured rubber, an intermediate load-carrying layer including a continuous helically-wound cord, and an outer tension layer;

b. Positioning said belt sleeve over a rotatably mounted vulcanizing cylinder having a plurality of axially spaced circumferential mold grooves, with said compression layer in contact with said cylinder;

c. Tensioning said belt sleeve;

d. Applying inward pressure to said tension layer while rotating said vulcanizing cylinder to thereby force said compression layer into said mold grooves, to form said ribs, sufficient rubber being present in said compression layer to fill said mold grooves; and

e. Curing said sleeve.

4,139,407

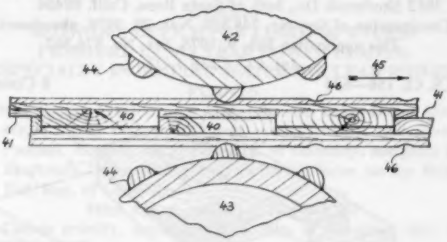
METHOD AND APPARATUS FOR FLATTENING WOOD BASED PANELS

Roland Etzold, 233 Lassen Ave., Mountain View, Calif. 94043

Filed Sep. 27, 1976, Ser. No. 726,901

Int. Cl.[2] B31F *1/00*

U.S. Cl. 156—209 **3 Claims**



1. The method of flattening a lignocellulosic building panel comprising the steps of producing elongated indentations on the backside of the building panel by applying pressure to the backside of the building panel in a direction perpendicular to the building panel while maintaining the building panel substantially flat, spacing said indentations at intervals and positioning the longitudinal axes of said indentations generally perpendicular to the direction of the desired curvature change.

4,139,408

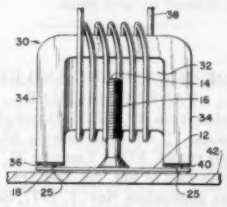
ADHESIVE FASTENER ARTICLE

Robert G. Kobetsky, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 28, 1977, Ser. No. 837,063

Int. Cl.[2] B32B *19/02;* **B23K** *13/02*

U.S. Cl. 156—380 **6 Claims**



1. An adhesive fastening device for securing a secondary workpiece to a primary work surface, the device including a platelike base of ferromagnetic material having a substantially uniform, predetermined cross-sectional thickness and carrying a layer of heat activable adhesive on the undersurface thereof, a plurality of protuberance means of limited height and surface area formed upwardly from the base, the protuberance means located in a pair of laterally spaced, parallel lines, each line being closely adjacent to laterally spaced sections of the perimeters of the layer of heat activable adhesive so that a U-shaped inductor core may be positioned over the base with the end

surfaces of the legs of the core abutting the laterally spaced lines of protuberances thereby minimizing the heat loss from the device as the device is heated through the completion of a magnetic flux circuit between the legs of the core with the base of the device.

6. An adhesive fastening comprising, in combination, the fastening device of claim 1 with a U-shaped core positioned so that the base completes a magnetic flux path circuit between the legs of the core, the end surfaces of the core positioned to abut the pair of laterally spaced lines of protuberances, said end faces being coated with a thin layer of wear resistant material so that said limited surface area protuberances will not harm said end surfaces when the core and device are associated under pressure to secure the device to a primary workpiece.

4,139,409

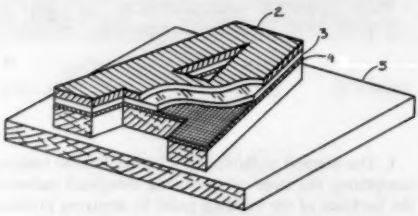
LASER ENGRAVED METAL RELIEF PROCESS

John A. Macken, 4039 Shadow Hill Dr., and Paul N. Palanos, 3852 Sherbrook Dr., both of Santa Rosa, Calif. 95404

Continuation of Ser. No. 745,856, Nov. 29, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,367

Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—634 **8 Claims**



1. A method of forming relieved structures comprising:

forming a mask of material for reflecting a laser beam, said mask comprising a metallic layer sandwiched between first and second organic layers;

establishing a pattern in said first organic layer to protect said metallic layer;

removing portions of said metallic layer not protected by said pattern;

bonding said mask to a substrate to form a masked array;

scanning said masked array with a laser beam which vaporizes portions of said first and second organic layers not protected by said metallic layer, said laser beam being controlled such that said substrate is vaporized to a desired depth in order to maintain a relieved structure in said substrate as defined by said mask.

4,139,410

METHOD OF DEWATERING AND DRYING IN A YANKEE MACHINE

Olli Tapio, Aatoksenkatu 10, 40720 Jyvaskyla 72; Lassi Veijonen, Kangaskatu 17, 40630 Jyvaskyla 63, and Kalevi Riihinen, Tohlopinkatu 46, 33310 Tampere 31, all of Finland

Continuation-in-part of Ser. No. 694,319, Jun. 9, 1976, abandoned. This application Nov. 1, 1977, Ser. No. 847,590

Int. Cl.[2] D21F *3/04, 5/02, 11/02*

U.S. Cl. 162—206 **10 Claims**

1. An improved process for the production of a paper web in a Yankee paper machine comprising the steps of

adhering a paper web to the lower surface of a Yankee felt,

conducting the web, the Yankee felt and a lower felt to a first nip formed between an upper suction press roll and a lower water-receiving press roll,

pressing the paper web in the first nip sandwiched between the Yankee felt and said lower felt,

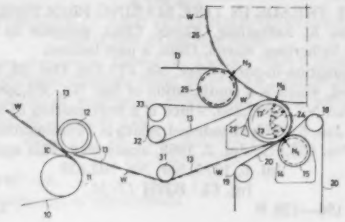
dewatering the paper web through both surfaces thereof in the first nip,

separating said lower felt from the web;

subjecting the paper web to suction from the suction roll working through the Yankee felt, with the Yankee felt and web extending partly around the suction roll,

running the paper web on the Yankee felt to a second nip formed between the suction roll and a Yankee drying cylinder,

pressing the paper web on and with the Yankee felt in the second pressing nip so as to dewater said web in said nip,



adhering the paper web in said second nip to the surface of the Yankee cylinder,

detaching the Yankee felt from the paper web while the web remains adhered to the surface of the Yankee cylinder, and

drying the paper web while it is adhered to the surface of the Yankee cylinder.

4,139,411

SYSTEM FOR FORMING AND TREATING A NARROW MULTI-LAYER WEB

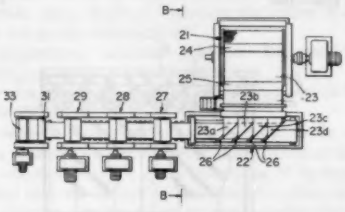
Oystein Johnsen, Oslo, Norway, assignor to Myrens Verksted A/S, Oslo, Norway

Filed Mar. 29, 1977, Ser. No. 782,446

Claims priority, application Norway, Mar. 31, 1976, 761116

Int. Cl.[2] D21F *11/08*

U.S. Cl. 162—123 **5 Claims**



1. A method of treating a continuous web of wood or cellulose pulp leaving a dewatering apparatus and having a solids content of approximately 25%, said pulp web being pressed for further dewatering and slitted and cut to bales of sheets of suitable size, characterized by slitting the pulp web in two or more longitudinal webs immediately after leaving the dewatering apparatus, bringing together or gathering the resulting narrower webs to a narrower multilayer web for further dewatering and final transverse cutting to appropriate sheet dimensions for stacking and packing into bales.

4,139,412

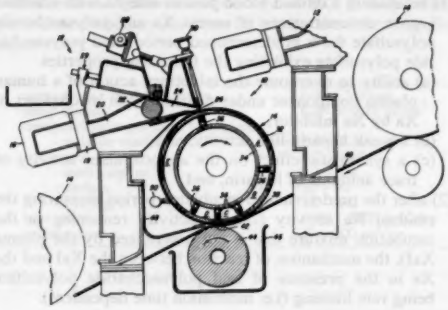
MULTI-PLY CONTINUOUS PAPER WEB FORMER

Warren G. Printz, Middletown, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Continuation of Ser. No. 685,788, May 13, 1976, abandoned, which is a continuation of Ser. No. 547,005, Feb. 4, 1975, abandoned, which is a continuation of Ser. No. 73,056, Sep. 15, 1970, abandoned, which is a continuation of Ser. No. 725,829, May 1, 1968, abandoned. This application May 2, 1977, Ser. No. 792,750

Int. Cl.[2] D21F *1/60, 3/10, 9/04*

U.S. Cl. 162—276 2 Claims



1. A multi-cylinder paper making machine for producing a multi-ply continuous web of paper having ply-forming cylinders including the combination of

(a) a multi-zoned wire mesh covered foraminous suction roll as at least one of said ply-forming cylinders.

(b) a continuous transfer ply carrier, and

(c) couching means disposed beneath the center of said suction roll and engaging said carrier providing a pressure nip.

a plurality of chambers separated by circumferentially spaced and generally radial divider elements engaging the inner surface of said roll, and forming discrete zones associated with the outer surface of said roll through the foraminous roll structure which provides communication between the inner and outer roll surfaces,

means for applying a film of paper component and water to an upper portion of said roll,

vacuum means for application of vacuum to some of said zones and pressure means for application of pressure to one of said zones,

a first zone to collect water from said film to form a wet ply,

a second zone below the center of the roll and subsequent to said first zone to effect transfer of said wet ply by direct or indirect engagement with said carrier, said transfer being facilitated by the pressure nip provided by said couching means,

the center of said roll, a divider element associated with said second zone, and said couching means pressure nip being in radial alignment,

a transition third zone adjacent to said second zone for carrying excess water in the wire mesh after ply transfer away from said second zone to an adjacent fourth water release zone including said pressure means for urging water off the wire surface,

said carrier being intimately associated with a lower portion of said roll and formed ply at least in the area along the complete arc of the roll corresponding to said transfer second zone,

the association of said carrier with said roll beginning at, or before, the area along the complete arc corresponding to said transfer second zone, said association of said carrier with said roll continuing from its beginning at least at or before said transfer second zone to a place lying in a radial line drawn from the center of said roll generally downwardly through a divider element of said second zone and through the center of the pressure nip provided by said couching means

whereby the combination of the carrier with the suction roll for the roll surface length of the second zone is an area below the center of said roll and in which the wet ply is below and between the wire mesh on the suction roll and above the carrier, and the upper surface of the wet ply is in contact with said wire mesh, and the lower surface of said wet ply is in direct or indirect contact with said carrier.

4,139,413

BLOW-OFF DEVICE FOR LIMITING EXCESS PRESSURE IN NUCLEAR POWER PLANTS, ESPECIALLY IN BOILING WATER NUCLEAR POWER PLANTS

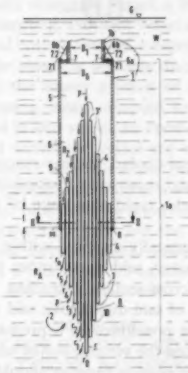
Ulrich Simon, Frankfurt am Main-Oberrad; Klaus-Dieter Werner, Langen; Dieter Hoffmann, Aschaffenburg, and Bernd Pontani, Alzenau, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, an der Ruhr Fed. Rep. of Germany

Filed Apr. 4, 1977, Ser. No. 784,265

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614620

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 5 Claims

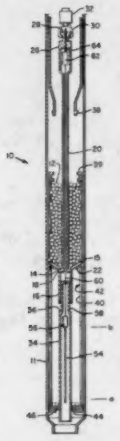


1. In a blow-off device for limiting excess pressure in nuclear power plants, at least one condensation tube disposed so that a lower outflow end thereof is immersed in a volume of water in a condensation chamber having a gas cushion located in a space above the volume of water, and an upper inflow end of the condensation tube extends out of the volume of water and is connectible to a source of steam that is to be condensed or a steam-air mixture, said outflow end of the condensation tube, for stabilizing the condensation, being provided with an assembly of wall parts forming passageways extending in axial direction for subdividing the steam flow and bubbles produced in the volume of water, said passageways of said assembly of wall parts being stepped in axial direction at both axial ends of said assembly of wall parts, said assembly of wall parts constitutes a plurality of tubes in mutually stepped disposition, said telescoped tubes are spaced from one another, defining annular zones therebetween and respective intermediate metal sheets are disposed in said annular zones.

4,139,414
SCRAM DEVICE HAVING A MULTIPLICITY OF NEUTRON ABSORBING MASSES

Nicholas Giuggio, East Longmeadow, Mass., and Richard C. Noyes, New Britain, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 10, 1977, Ser. No. 805,263
Int. Cl.[2] G21C 7/22
U.S. Cl. 176—86 R 7 Claims



1. In a liquid metal-cooled nuclear reactor, apparatus for holding, releasing, and resetting a multiplicity of neutron absorbing masses for the rapid shutdown of the reactor core, comprising:

a. a safety duct vertically disposed within and in fixed relation to said reactor, said duct further having a substantially uniform cross-section extending from below said core to the top of said duct above said core;

b. a hopper valve positioned at a predetermined location above said core on the vertical axis of said duct, said valve having an upper portion forming shoulder means;

c. a plurality of trapdoors, each hinged at the same elevation to the inside of said duct for vertical movement such that when said valve is in said predetermined location said doors rest in a neutral position on said shoulder means whereby said doors and said valve block substantially the entire cross-section of said duct thereby providing support for said absorbing masses in the cocked position above said core;

d. actuating means located within said duct for maintaining the predetermined location of said valve and for reciprocally moving said valve a predetermined distance sufficient for said trapdoors to lose contact with said shoulder means;

e. a vertically moveable platform which blocks substantially the entire cross-section of the lower portion of said duct; and

f. a first lifting means for vertically reciprocating said platform substantially between said hinges and below said reactor core.

4,139,415
IN VITRO METHOD OF DETERMINING THE BIOLOGICAL ACTIVITY OF FACTOR Xa INHIBITOR IN BLOOD

Ee T. Yin, St. Louis, Mo., and Oddvar Tangen, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

Filed Nov. 23, 1976, Ser. No. 744,227
Claims priority, application Sweden, Dec. 1, 1975, 7513495
Int. Cl.[2] G01N 31/14, 33/16
U.S. Cl. 195—103.5 R 7 Claims

1. A method for the in vitro determination of the biological activity of Factor Xa inhibitor (XaI) in blood, which includes the steps of

(1) incubating a diluted blood plasma sample with constant known concentrations of excess Xa and polysaccharide polysulfate for a predetermined period, said polysaccharide polysulfate exhibiting the following properties

(a) ability to overcome the inhibitory action of a human plasma component under neutralization mechanism of Xa by Xa inhibitor,

(b) a weak heparin-like activity, and

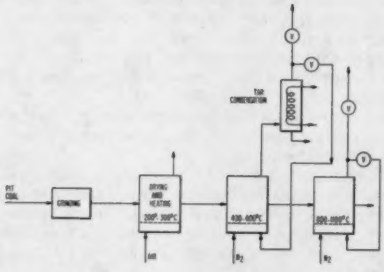
(c) a synergistic effect on the anticoagulant activity of trace amounts of heparin, and

(2) after the predetermined incubation period measuring the residual Xa activity (i.e. Xa activity remaining in the incubation mixture that is not neutralized by the plasma XaI), the mechanism of reaction between the XaI and the Xa in the presence of said polysaccharide polysulfate being rate limiting (i.e. incubation time dependent).

4,139,416
CARBONACEOUS MATERIAL WITH HIGH CHARACTERISTICS OF SURFACE AREA AND ACTIVITY AND PROCESS FOR PRODUCING THE SAME

Luigi Palumbo, and Angelo Colletta, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Continuation of Ser. No. 650,986, Jan. 21, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,915
Claims priority, application Italy, Jan. 21, 1975, 47769 A/75
Int. Cl.[2] C01B 31/10; C10B 47/24, 57/02
U.S. Cl. 201—8 3 Claims



1. A continuous process for the production of carbonaceous material with high properties of surface area, porosity and surface activity, comprising grinding pit coal, drying and heating the ground coal in a first stage at a temperature of 200° to 300° C. for 15 to 120 minutes by fluidizing the ground coal with gas consisting essentially of 50 to 100% by volume air, 0 to 50% by volume steam and 0 to 50% by volume nitrogen in addition to that present in said air thereby to produce a dried and heated material; heating said material by fluidization in a second heating stage with a fluidizing gas that is initially 0 to 20% by volume air, 0 to 50% by volume steam, and 50 to 100% by volume nitrogen in addition to that present in any supplied air, at 400° to 600° C. for 10 to 60 minutes, thereby to produce a further heated material and off-gases; cooling said off-gases to produce condensed tar and residual gases; passing the further heated material from said second heaating stage to a third

heating stage, still further heating the material by fluidization in said third heating stage with a fluidizing gas that is initially 0 to 70% by volume air and 30 to 100% nitrogen in addition to that present in any supplied air, at 800° to 1100° C. for 10 to 60 minutes with the production of off-gases; recycling to said second heating stage as fluidizing gas 10 to 95% by volume of said residual gases; recycling to said third heating stage as fluidizing gas 10 to 95% by volume of said off-gases from said third heating stage; replacing said fluidizing gases in said second and third heating stages substantially entirely with said recycled residual gases and off-gases, respectively, by the time said process is fully on-steam; and cooling said still further heated material below a temperature of 100° C. to produce a particulate carbonaceous material having the following properties:

average size of the particles	0.4 to 3.0 mm
lump density	0.20 to 0.76 g/cm^3
composition in per cent by weight:	
- volatile matter	1.0 - 3.0
- ash	6.0 - 12.0
- total sulphur	0.2 - 1.0
- carbon	80 - 90
- hydrogen	1.0 - 2.0
heat value	6000 - 8000 kcal/kg
surface area	30 - 300 m^2/g.

4,139,417

LUBRICATING OIL COMPOSITIONS CONTAINING COPOLYMERS OF OLEFINS OR OF OLEFINS AND NON-CONJUGATED DIENES WITH UNSATURATED DERIVATIVES OF CYCLIC IMIDES

Gilbert Marie, Pau; André Lang, Billere, and Gilbert Chapelet, Bron, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

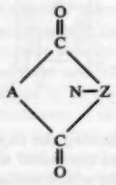
Continuation of Ser. No. 687,697, May 19, 1976, abandoned, which is a division of Ser. No. 637,221, Dec. 3, 1975, Pat. No. 4,063,010. This application Nov. 16, 1977, Ser. No. 851,990

Claims priority, application France, Dec. 12, 1974, 74 40949

Int. Cl.^{2} C10M *1/32*

U.S. Cl. 252—51.5 A **16 Claims**

1. A lubricating composition containing a major proportion of a lubricating oil, and a viscosity index improving and sludge dispersing amount of an oil-soluble polymer additive, said polymer additive being a copolymer consisting of, by weight, x% units from ethylene, y% units from a mono-olefin having 3 to 6 carbon atoms or from said mono-olefin and a non-conjugated diene, and z% units from an N-alkenylated imide of the formula:



wherein Z represents an alkenyl radical having 2 to 16 carbon atoms, A is a saturated or unsaturated bivalent hydrocarbon radical which has 2 to 12 carbon atoms, or substituted with amino, halo or carboxyl groups, the values of x, y and z being such that $5 \leqq x \leqq 75$, $5 \leqq y \leqq 85$ and $0.1 \leqq z \leqq 20$, with $x+y+z = 100$, said polymer additive further having a reduced viscosity, as measured in a solution at 0.1% in decalin at 135° C., comprised between 0.5 and 2 and a polydispersity lower than 5.

4,139,418

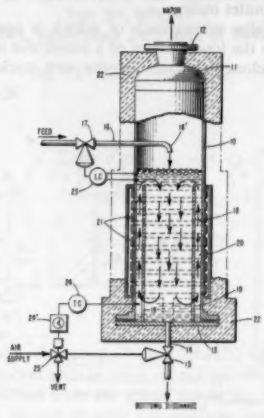
METHOD AND APPARATUS FOR THE DISTILLATION PURIFICATION OF ORGANIC HEAT TRANSFER FLUIDS

Charles E. Sech, 45 Creekwood, Glendale, Ohio 45246

Continuation-in-part of Ser. No. 570,082, Apr. 21, 1975, abandoned. This application Feb. 25, 1977, Ser. No. 771,984

Int. Cl.^{2} B01D *3/42*

U.S. Cl. 202—181 **8 Claims**



1. Apparatus for the distillation purification of organic heat transfer fluid which comprises:

a closed vertically elongated vessel, a feed inlet conduit for said fluid connecting with said vessel at a locus intermediate the top and bottom thereof, a vapor outlet in the upper portion of the vessel, a bottoms discharge conduit connecting with the lower portion of the vessel, electric resistance heating means adapted to provide heat to a body of liquid in said vessel, an open-ended vertical draft tube disposed within the vessel and extending from near the bottom thereof to an elevation below said vapor outlet, means to control said fluid at a level above said draft tube, said draft tube defining a narrow annular space for fluid flow between the tube and the vertical sidewall of said vessel, said narrow annular space being in the range of from about 0.1 to about 1.5 inches.

4,139,419

ARRANGEMENT FOR DOSING A COAL CHARGE TO A COKING BATTERY

Jaroslav Limberg, Prague, Czechoslovakia, assignor to Hutni projekt Praha, projekcni a inzenyrska organizace, Prague, Czechoslovakia

Filed Jan. 21, 1977, Ser. No. 760,986

Claims priority, application Czechoslovakia, Jan. 21, 1976, 370/76

Int. Cl.^{2} B65G *65/30;* C10B *31/00;* F26B *17/00*

U.S. Cl. 202—262 **4 Claims**

1. An arrangement for treating low-grade coal prior to feeding it to a coking battery, comprising in combination:

a vertical suspension preheater vessel having a lower inlet means adapted for introducing preheated gas into the preheated vessel,

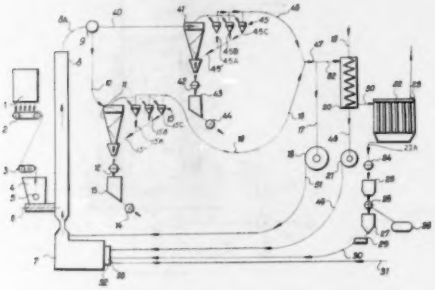
combustion means connected to and in communication with the lower portion of said preheater vessel;

means operatively connected to and communicating with the preheater vessel for supplying a coking mixture therein; te preheater vessel having an upper outlet means for removing the preheated gas and coking mixture suspended therein from the preheater vessel,

distributor means connected to said upper outlet means of the preheater;

two cyclone separator means, each of which has a primary cyclone separator and at least one secondary cyclone separator connected in series with its primary cyclone separator, the two cyclone separator means being connected in parallel to each other and being adapted to be alternately connected to said upper outlet means of said preheater vessel via said distributor means, each primary and secondary cyclone having an upper outlet means and a lower outlet means;

two first valve means each of which is operatively connected to the lower outlet of a respective one of the primary cyclone separator of the two cyclone separator means;



two dosing containers each in communication with a corresponding first valve means and adapted to receive a charge for feeding coking batteries;

the upper outlet means of each primary cyclone separator being connected to and communicating with its secondary cyclone separator, the upper outlet means of all secondary cyclone separators of each cylcone separator means leading into a common first conduit;

first gas blower means having a suction inlet means and a pressure outlet means, said suction inlet means being in communication with said common first conduit and said pressure outlet means being connected and in communication with said combustion means;

combustion air preheating means having an inlet in communication with said common first conduit and an outlet in communication with said combustion means.

4,139,420

LIQUID WASTE DISPOSAL SYSTEM

Helmut Stünkel, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

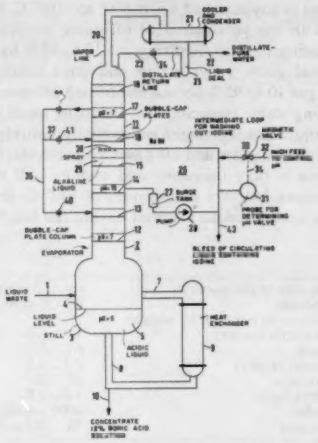
Filed Feb. 22, 1977, Ser. No. 770,378

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612510

Int. Cl.[2] B01D *3/14*

U.S. Cl. 203—37 **14 Claims**

1. Method for treating radioactive contaminated aqueous liquid to remove volatile radioactive substances contained therein, which comprises maintaining a body of liquid containing contaminants in a still zone at a pH below 7, heating said liquid to generate vapors and volatilize radioactive substances, passing said generated vapors and volatilized radioactive substances upwardly in a column containing a plurality of spaced plates in intimate contact with reflux condensate on the plates resulting from the partial condensation of the vapors in the column, withdrawing liquid from the lower plate of an intermediate group of at least two successive plates and recirculating said liquid to the upper plate of said intermediate group, maintaining said recirculating liquid alkaline and at a pH different from the said body of liquid in said still zone by a pH value of at least 2 to aid in retaining volatile radioactive substances passing up through said intermediate group of plates in contact



with said liquid of a different pH on said plates, and releasing purified vapor free of volatile radioactive substances from the top of said column.

4,139,421

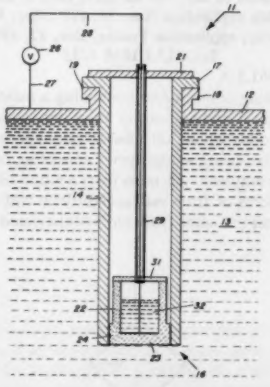
METHOD OF DETERMINING OXYGEN CONTENT

Prodyot Roy, Saratoga, and George J. Licina, Campbell, both of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 784,412, Apr. 4, 1977, which is a continuation-in-part of Ser. No. 616,940, Sep. 26, 1975, abandoned. This application May 25, 1978, Ser. No. 909,366

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—1 T **9 Claims**



1. A method of determining the oxygen content of a liquid metal comprising at least one metal selected from the group consisting of alkali metals, which method comprises measuring the EMF across an electrolytic cell in which one of the electrodes comprises the liquid metal, the other electrode is a reference electrode of a mixture comprising a known concentration of one of the metals selected from the group of gallium, indium and tin, and an oxide of said metal, with the mixture being liquid at the temperature of measurement, and the electrolyte is an oxygen ion conductive, solid electrolyte body wall having a pair of opposite side surfaces with the first one of said surfaces being in intimate contact with the liquid and the other

one of said surfaces being in intimate contact with said reference electrode.

4,139,422

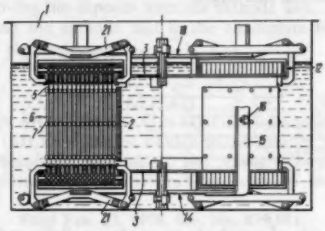
METHOD OF FORMING CERMET ELECTRODES FOR ALKALINE ACCUMULATORS

Ivan A. Kolosov, ulitsa Astrakhanskaya, 118, kv. 54; Jury E. Ivanyatov, ulitsa M.Zatonskaya, 21, and Vera N. Kalininskaya, ulitsa Sakko-Vantsetti, 23, kv. 23, all of Saratov, U.S.S.R.

Division of Ser. No. 795,880, May 11, 1977. This application Nov. 16, 1977, Ser. No. 852,024

Int. Cl.[2] C25F *1/00, 1/04*

U.S. Cl. 204—2.1 **10 Claims**



1. A method of forming cermet electrodes used in alkaline accumuators by anode and cathode polarization of a band stock in an electrolyte, comprising the steps of assembling the band stock together with a counterelectrode by winding the band stock together with the counterelectrode into a roll prior to forming; insulating the band stock and counterelectrode from each other during winding so that the same are electrically insulated from each other; and respectively connecting the band stock and the counterelectrode to opposite poles of a power source.

4,139,423

SINTERED NEGATIVE PLATE

Saverio F. Pensabene, and Arthur J. Catotti, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Apr. 7, 1978, Ser. No. 894,398

Int. Cl.[2] C25D *9/06, 9/08*

U.S. Cl. 204—2.1 **7 Claims**

1. A process for the manufacture of negative electrodes for nickel-cadmium alkaline storage cells the steps consisting essentially of forming a porous nickel plaque, immersing said porous plaque in a slightly acidic cadmium nitrate solution, removing said plaque from said nitrate solution and heating said plaque in air until substantially dry, immersing said dried plaque in an alkali hydroxide solution, removing said plaque from said hydroxide solution and rinsing said plaque with water, reheating said plaque in air until substantially dry, repeating the foregoing treatments of said plaque until a desired electrochemical loading in the pores of said plaque is attained, heating said plaque with said desired electrochemical loading to a temperature not substantially less than 200° C. and not substantially more than 300° C. until substantially all of the $Cd(OH)_2$ in said plaque is converted to CdO and nitrate impurities in said plaque are converted to nitrogen oxide gases and volatilized, immersing said plaque with said converted CdO in a second alkali hydroxide solution, cathodizing and then anodizing said plaque in said second solution, removing the cathodized and anodized plaque from said second solution and rinsing said plaque with water and heating said plaque until said plaque is substantially dry.

4,139,424

SOCKET STRUCTURE FOR THE BALL OF A BALL POINT PEN REFILL

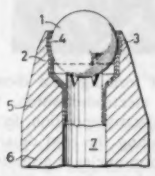
Heinz G. Herrnring, Alveslohe, Fed. Rep. of Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 662,940, Mar. 1, 1976, Pat. No. 4,061,430, Continuation-in-part of Ser. No. 456,860, Apr. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 366,855, Jun. 4, 1973, Pat. No. 3,837,750. This application Jun. 24, 1977, Ser. No. 809,941

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1972, 2226902

Int. Cl.[2] C25D *7/04, 5/50*

U.S. Cl. 204—26 **5 Claims**



1. In a method of treating a ball point refill having a multilayer bearing socket with an outer supporting shell comprising a substance selected from the group consisting of chromium, nickel, copper, tin and an alloy containing at least one of said metals and a ball arranged inside said outer supporting shell, said socket including a bearing structure comprising a backing layer having a hardness exceeding 800 kg/sq. mm Vickers disposed inside said outer supporting shell, and an inner lining in the form of a soft silver film adjacent to and facing said ball and having a hardness of less than 200 kg/sq. mm Vickers, which includes the improvement of forming said backing shell by electrolytically treating said socket structure in a silver plating bath containing particles of boron carbide or silicon carbide dispersed therein alternately with a cathodic current and with an anodic current to deposit said backing shell and subjecting the completed socket structure to a heat treatment in vacuum or in a protective inert atmosphere at a temperature within the range of from 200° C. to 500 ° C. for a period of from 20 minutes to 3 hours.

4,139,425

COMPOSITION, PLATING BATH, AND METHOD FOR ELECTROPLATING TIN AND/OR LEAD

William E. Eckles, Cleveland Heights, and William J. Willis, North Royalton, both of Ohio, assignors to R. O. Hull & Company, Inc., Cleveland, Ohio

Filed Apr. 5, 1978, Ser. No. 893,618

Int. Cl.[2] C25D *3/32, 3/36, 3/60*; C07D *207/00*

U.S. Cl. 204—43 S **31 Claims**

1. A composition comprising the reaction product of at least one unsaturated nitrogen-containing heterocyclic compound with a mixture comprising formaldehyde and at least one unsaturated aliphatic aldehyde containing from three to about six carbon atoms.

9. An aqueous acidic plating bath for electrodeposition of tin, lead or tin-lead alloys comprising (A) at least one bath-soluble metal salt selected from the group consisting of a stannous salt, a lead salt, or a mixture of stannous and lead salts, and (B) as a brightener agent, an effective amount of at least one composition according to any of claims 1–8.

30. A brightener additive composition for aqueous acid tin, lead or tin-lead electroplating baths comprising a mixture of

(B) at least one composition according to any of claims 1–8, and

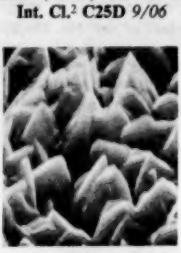
(C) at least one aromatic aldehyde or ketone.

4,139,426

PROCESS FOR THE ELECTROLYTIC FORMATION OF LEAD DIOXIDE SOLAR ABSORPTION COATING

Ferenc J. Schmidt, Ardmore, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,533
Int. Cl.[2] C25D 9/06
U.S. Cl. 204—57 10 Claims



1. In the method of forming lead dioxide solar energy collector coatings by electrodeposition, the improvement comprising two stage electrodeposition, from a bath suitable therefor, by first depositing the lead dioxide at a relatively high overpotential to form nuclei at a multiplicity of random locations on the surface of the substrate followed by deposition at a reduced overpotential for a longer period of time to cause crystal growths outward from said preformed nuclei, said crystal growths comprising a multiplicity of upwardly pointing pyramidal shapes adapted to trap incident radiation to enhance the absorption thereof.

4,139,427

EUROPIUM CHLORIDE ENRICHMENT PROCESS

Ekkehard Greinacher, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Fed. Rep. of Germany

Filed Sep. 9, 1977, Ser. No. 831,759
Int. Cl.[2] C25C 3/00
U.S. Cl. 204—64 R 2 Claims

1. In the process of electrolyzing a fused mixture of rare earth chlorides in which misch metal and non-electrolyzed resiudual salts are obtained,

the improvement comprising electrolyzing a melt of rare earth chlorides which contains at least 4% by weight of fluorides in the form of alkali fluorides, alkaline earth fluorides and/or rare earth fluorides,

whereby europium chloride is enriched in said residual salts in the form of water-extractable europium-II-chloride.

4,139,428

PREPARATION OF ALKALI METALS

Albert J. Dean, and Francis J. Ross, both of Niagara Falls, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1977, Ser. No. 847,033
Int. Cl.[2] C25C 3/02
U.S. Cl. 204—68 4 Claims

1. In a process for the production of an alkali metal by electrolyzing a fused alkali metal salt electrolyte within a direct current electrolytic cell, a method of reducing the production of the alkali metal from said cell comprising: adding to the electrolyte about 0.01–2 percent by weight of the electrolyte of anhydrous aluminum oxide or magnesium oxide and recovering the production of the cell by removing aluminum or magnesium metal values from the cell.

4,139,429

ELECTROLYTIC CELL

Frederick A. Steward, Zelienople, and James H. Weet, Mars, both of Pa., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 15, 1978, Ser. No. 916,327
Int. Cl.[2] C25C 1/00; C25D 21/10, 17/02
U.S. Cl. 204—105 R 7 Claims

1. An electrolytic cell which comprises:

a cell tank adapted to contain an electrolyte and having two side walls, two arcuate end walls and a bottom;

adjacent to each arcuate end wall an impeller casing extending vertically to the bottom of the tank and having an arcuate inner surface, which faces the arcuate end wall;

a substantially centrally disposed baffle extending horizontally between the two impeller casings and vertically to the bottom of the tank;

an impeller rotatably disposed within each of said impeller casings;

means for rotating each of said impellers and imparting a recirculating flow to said electrolyte in the cell around the centrally disposed baffle;

in each space between the centrally disposed baffle and an adjacent side wall at least one removable cathode disposed parallelly with the centrally disposed baffle and with said side wall, each cathode having two vertical surfaces and two vertical side edges;

on each side of a cathode an anode parallelly and equidistantly spaced from said cathode, each anode having two vertical surfaces and two vertical side edges;

vertical non-conductive vanes disposed unattachedly from those vertical side edges of said cathode and of any anode interspaced between two cathodes, which side edges face the direction of flow of the recirculating electrolyte, said vanes extending partially towards the arcuate end walls of the tank;

positioning adjustment means for said vanes to substantially proportion the flow of recirculating electrolyte through each of the channels formed by adjacent anodes and cathodes, and

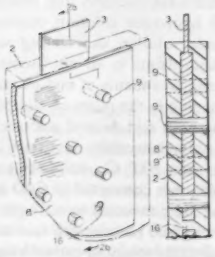
means for electrically energizing the cell.

4,139,430

PROCESS OF ELECTRODEPOSITION AND PRODUCT UTILIZING A REUSABLE INTEGRATED CATHODE UNIT

Ronald Parkinson, 16 Courtham Ave., Thornhill, Ontario, and Richard A. Sinton, 41 Inniswood Dr., Scarborough, Ontario, both of Canada

Division of Ser. No. 738,148, Nov. 26, 1976, Pat. No. 4,082,641. This application Jan. 4, 1978, Ser. No. 866,856
Claims priority, application United Kingdom, Apr. 1, 1976, 13340/76
Int. Cl.[2] C25C 1/06, 1/12
U.S. Cl. 204—108 5 Claims



1. The method of electrodepositing a multiplicity of discrete metal electrodeposits from an electrolyte, said method characterized by:

i. employing in said electrolyte a reusable cathode unit hav-

ing two working faces and comprising an integrated whole of two interlocking parts, a substantially rigid slab of non-conductive material with a conductive metal assembly embedded therein, said assembly having projections at spaced locations that penetrate the surface of the slab thereby forming an array of solid, conductive metal islands, each metal island having a surface area of less than about 0.2 square inches and more than about 0.02 square inches and being flush with or raised above the surface of the slab and separated from each other sufficiently for the electrodeposition of discrete metal deposits thereon, each of which has a basal area several times larger than that of the island on which it is deposited,

ii. passing electric current through the electrolyte,

iii. electrodepositing metal on said cathode unit thereby producing individual metal deposits, weighing at least 5 g but not more than 50 g,

iv. removing the deposits from the cathode unit,

v. reusing the cathode unit in the electrolyte for further metal electrodeposition.

4,139,431

PROCESS AND APPARATUS FOR THE REMOVAL OF SILVER FROM FIXER SOLUTIONS

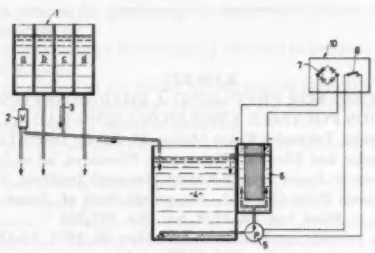
Rudolf Scheidegger, Feldmeilen, and August Zurrer, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 22, 1978, Ser. No. 879,991

Claims priority, application Switzerland, Feb. 28, 1977, 2459/77

Int. Cl.[2] C25C *1/20*

U.S. Cl. 204—109 **7 Claims**



1. An electrolytic process for removing silver from photographic fixer solution wherein the solution is circulated in a closed cycle including a reservoir and an electrolytic cell, the residence time of the fixer solution in said cell being not greater than 1 minute, the electrode loading (mA/cm^2) being reduced in chronologically consecutive stages.

4,139,432

PROCESS FOR ELECTROCHEMICALLY RECOVERING PRECIOUS METALS FROM ORES

Hugh A. Ghiringhelli, 436 Danbury Rd., Wilton, Conn. 06897, and Kenneth S. Deffeyes, 40 Western Way, Princeton, N.J. 08540

Filed Aug. 16, 1976, Ser. No. 714,827

Int. Cl.[2] C25C *1/20*

U.S. Cl. 204—110 **11 Claims**

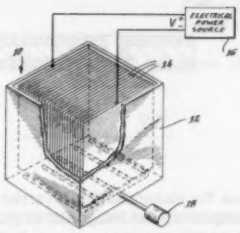
1. A process for electrochemically treating ores to increase the rate of recoverability of precious metals electrolytically mobile therein, comprising:

forming a slurry of the ore;

mixing a cyanide complexing agent for the precious metal and the water soluble electroconductive catonic resin polyvinylbenzyltri-methylammonium chloride as an electrolyte in dilute concentrations suitable to provide mobility for the precious metal desired to be recovered with the ore slurry;

placing the ore slurry and electrolyte into direct touching contact with both anodic and cathodic electrodes;

applying a voltage across the electrodes effective to produce a current density in the ore slurry and electrolyte of about 10 to 20 amperes per square meter to dissolve the precious metal from the slurry; and



agitating the ore slurry and electrolyte while the voltage is being applied and while in contact with the electrodes sufficiently to provide bulk diffusion of the ore grains in the slurry in a direction across the interelectrode space and to bring the grains into electrical contact with the electrodes to recover the metal by electrodeposition;

whereby the dissolution rate of the precious metals in the ore is increased and their rapid recovery is facilitated.

4,139,433

HYDROCRACKING PROCESS WITH AQUEOUS AMMONIA REJUVENATED ZEOLITE CATALYST COMPRISING NON-ZEOLITIC NOBLE METAL

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 334,676, Feb. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 121,536, Mar. 5, 1971, abandoned. This application May 16, 1977, Ser. No. 796,969

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

Int. Cl.[2] C10G *13/10*; B01J *29/12, 29/38*

U.S. Cl. 208—111 **10 Claims**

1. A hydrocarbon conversion process which comprises subjecting a hydrocarbon feedstock plus added hydrogen to contact at elevated conversion temperatures with a catalyst comprising about 0.1–3 wt.% of a non-zeolitic Group VIII noble metal supported on a siliceous zeolite carrier having an ion exchange capacity of at least about 0.1 meq/g, and wherein at least 50% of the original zeolitic metal content of said zeolite carrier has been replaced by hydrogen ions and/or polyvalent metal ions, said catalyst having been previously subjected to thermal and/or hydrothermal conditions resulting in a maldistribution of said Group VIII noble metal on said carrier with resultant reduction in hydrogenation activity, and which has thereafter been rejuvenated to substantially its original fresh activity by a process in which aqueous ammonia is used as the sole rejuvenating reagent, said rejuvenation process consisting essentially of:

A. contacting said catalyst in an oxidized or sulfided state with a drainable excess of a reagent consisting essentially of a 0.1–30 weight-percent aqueous ammonium hydroxide solution, and correlating the contacting time with the temperature and reagent strength so as to effect a substantial improvement in hydrogenation activity of said catalyst while retaining therein at least about 90 percent of said Group VIII noble metal;

B. draining said excess reagent from the catalyst; and

C. drying and calcining the separated catalyst at temperatures in the range of about 500°–950° F. while maintaining water vapor partial pressures below about 10 psi.

4,139,434

METHOD OF MAKING CIRCUITRY WITH BUMP CONTACTS

William P. Dugan, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Jan. 30, 1978, Ser. No. 873,460
Int. Cl.[2] C25F *3/16*; C25D *7/00, 7/06*
U.S. Cl. 204—129.35 **7 Claims**

1. A process for manufacturing a carrier suitable for semiconductor components and integrated chips, said process comprising the steps of:

(a) coating both sides of a sheet of copper with a photoresist material;

(b) exposing the photoresist material on one side of the copper sheet to light in accordance with a desired lead pattern and exposing the photoresist material on the opposite side of the copper sheet to light in accordance with a desired bump pattern;

(c) developing the photoresist to expose those portions of the copper sheet to be etched away;

(d) applying a first etching solution to the lead circuit side only of the copper sheet, whereby the etching solution will eventually contact the bump circuit side after etching through an aperture to etch away the copper on the bump circuit side to a lesser depth than on the lead circuit side except for the desired bump portions;

(e) removing all of the remaining photoresist material; and

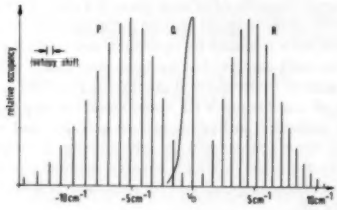
(f) polishing the bump circuit to remove sharp edges.

4,139,435

METHOD OF SEPARATING ISOTOPES

Hans-Joachim Niemann, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Apr. 13, 1976, Ser. No. 676,461
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2517173
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 R **10 Claims**



1. In a method of separating isotopes from a mixture of respective compounds containing the respective isotopes and having a quasi-continuous spectrum, physically or chemically by means of laser radiation, the improvement which comprises subjecting a vaporous mixture of the compounds containing the respective isotopes to laser radiation with a spectral width which corresponds maximally to the width of the isotope shift, determining points of accumulation of rotational vibration lines in the spectrum of the one compound containing the desired isotope, adjusting the frequency of the laser radiation to cover points of accumulation of rotational vibration lines in the spectrum of the one compound containing the desired isotope, applying the radiation with sufficient intensity so that the absorption of the radiation reaches the saturation region, and excites considerably more molecules of the one compound containing the desired isotope compared to molecules containing the other isotope, the radiation being from a pulsed laser and being applied in pulses having a duration shorter than the rotational relaxation time of the one compound containing the desired isotope.

4,139,436

POLYETHERURETHANE COMPOSITION AND POLYMER PREPARED BY PHOTOPOLYMERIZATION

Shirish R. Jasani, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 7, 1977, Ser. No. 766,321
Int. Cl.[2] C08B *18/00, 63/00*
U.S. Cl. 204—159.16 **9 Claims**

1. In a liquid ethylenically unsaturated polyetherurethane composition having no free NCO, a viscosity at 24° C. of 1,000 to 10,000 centipoises, dispersible in dilute aqueous sodium hydroxide and capable of being polymerized by actinic light to yield a solid having a Shore A hardness of at least 30, the improvement wherein said composition contains 0.5 to 15 percent of dialkyl aminoalkyl acrylate or methacrylate, said alkyl radical containing 1 to 10 carbon atoms said improved composition being capable of producing a printing plate having fine half-tone dots.

4,139,437

PROCESS FOR PREPARING A THERMOSETTING AQUEOUS POLYMER EMULSION USING RADIATION

Kunio Araki, Takasaki; Keizo Makuuchi, Sakai; Tohru Takagi, Hiratsuka, and Hiroyuki Nakayama, Ninomiya, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Kansai Paint Co., Ltd., Amagasaki, both of, Japan

Filed Apr. 18, 1978, Ser. No. 897,366
Claims priority, application Japan, May 10, 1977, 52-53332
Int. Cl.[2] C08F *8/00*
U.S. Cl. 204—159.16 **10 Claims**

1. A process for preparing a thermosetting aqueous polymer emulsion comprising:

(1) dispersing a monomer mixture of 90.0–99.9 wt % of a radical polymerizable hydrophobic ethylenic unsaturated monomer having an ethylenic unsaturated bond in its molecule and 0.1–10.0 wt % of a radical polymerizable crosslinkable monomer having more than two ethylenic unsaturated bonds in its molecule in water in which a specific amount of surface active agent is dissolved to form a dispersion,

(2) irradiating the dispersion with an ionizing radiation to effect the first stage emulsion polymerization,

(3) adding a monomer mixture of 52.0–97.0 wt % of the radical polymerizable hydrophobic ethylenic unsaturated monomer, 2.5–40.0 wt % of a radical polymerizable ethylenic unsaturated monomer having a hydroxyl group and 0.5–8.0 wt % of a radical polymerizable ethylenic unsaturated monomer having a carboxyl group to the first stage polymer emulsion in the range of 1/9–6/4 parts by weight on the basis of the total amount of the unsaturated ethylenic unsaturated monomers used in the first stage emulsion polymerization,

(4) irradiating with an ionizing radiation to carry out emulsion polymerization.

4,139,438

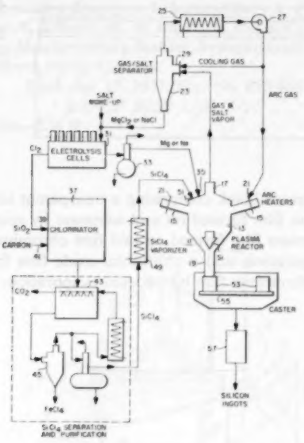
ARC HEATER PRODUCTION OF SILICON INVOLVING ALKALI OR ALKALINE-EARTH METALS

Maurice G. Fey, Plum Borough; Francis J. Harvey, II, Murrysville, and Jack McDonald, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 757,546, Jan. 6, 1977, Pat. No. 4,102,765. This application Mar. 31, 1978, Ser. No. 891,992

Int. Cl.[2] B01K *1/00;* C01B *33/02*

U.S. Cl. 204—164 4 Claims



1. A process for producing the high purity silicon comprising the steps of:

(a) halogenating a silica-bearing material to produce a halide of silicon,

(b) providing an arc heater having spaced generally hollow, cylindrical electrodes forming an arc chamber communicating with a reaction chamber,

(c) striking an electric arc in an axial gap between the electrodes,

(d) introducing an arc gas selected from the group consisting of an inert gas, hydrogen, carbon monoxide or a mixture thereof through the gap to provide an elongated arc stream extending into the reaction chamber,

(e) feeding into the arc stream a quantity of a metal reductant selected from the group consisting of an alkali metal and an alkaline-earth metal,

(f) feeding into the arc stream a quantity of silicon halide to react with the metal reductant to produce reaction products including liquid silicon and a salt of the metal reductant,

(g) projecting the reaction products into the reaction chamber tangentially to cause the liquid silicon to separate centrifugally from the salt, and

(h) depositing the liquid silicon on a downwardly extending surface to permit the liquid silicon to flow into an associated receptacle.

4,139,439

HYDROGEN ISOTOPE SEPARATION

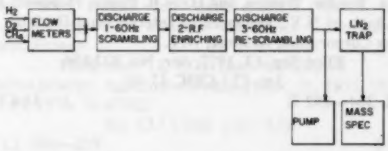
Thomas J. Manuccia, Laurel, Md., and Christine E. Geosling, Oakton, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1978, Ser. No. 911,261

Int. Cl.[2] C25B *1/00;* B01K *1/00;* B01D *59/00*

U.S. Cl. 204—164 12 Claims

1. A method of separating isotopes of hydrogen which comprises subjecting a mixture of methane and isotopes of hydrogen in a H-M mole ratio from about 1000:1 to about 1:10 to a glow electrical discharge from about 10^{-3} eV to about 50 eV per hydrogen bond at a temperature from about 50° K. to about 310° K. and at a pressure from about 0.3 Torr to about 25 Torr if said flow electrical discharge is self-sustained or to the



pressure at which arcing ocurrs if said glow electrical discharge is external.

4,139,440

ELECTROFOCUSING IN BUFFERS

Andreas Chrambach, Bethesda, and Nga Y. Nguyen, Kensington, both of Md., assignors to Government of the United States, Washington, D.C.

Filed Jun. 20, 1977, Ser. No. 808,378

Int. Cl.[2] G01N *27/26*

U.S. Cl. 204—180 G 5 Claims

1. In a method of isoelectric focusing between acid anolyte and basic catholyte, the improvement which comprises forming a pH gradient in a mixture of a plurality of buffers located in the field between said anolyte and said catholyte, wherein the a acid anolyte and basic catholyte are replaced by the leading and trailing buffers of the buffer mixture, possessing the lowest and highest pK_2 values of the buffer mixture.

4,139,441

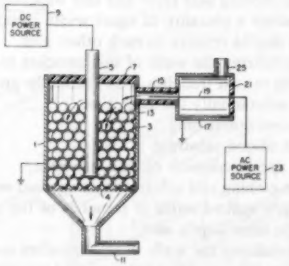
ELECTROFILTRATION WITH BI-DIRECTIONAL POTENTIAL PRETREATMENT

Phillip R. Bose, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 10, 1978, Ser. No. 876,590

Int. Cl.[2] B03C *5/00*

U.S. Cl. 204—191 11 Claims



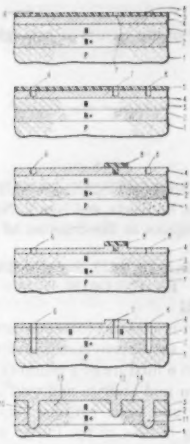
1. In a method for separating subdivided solids from a liquid having a low electrical conductivity by passing a mixture of the liquid and the solids through a separation zone, subjecting the mixture to an electrostatic field of unidirectional polarity in the separation zone whereby said solids adhere to a surface of at least one solid body in the separation zone, and recovering the liquid from the separation zone, the improvement comprising: subjecting said mixture to at least one electrostatic field of oscillating intensity before subjecting said mixture to said unidirectional electrostatic field.

4,139,442

REACTIVE ION ETCHING METHOD FOR PRODUCING DEEP DIELECTRIC ISOLATION IN SILICON

James A. Bondur, Walden, and Hans B. Pogge, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1977, Ser. No. 832,856
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 E 14 Claims



1. The process comprising: providing a silicon substrate,
placing on said substrate a layer of material which is reactively ion etched at a substantially lower rate than said substrate,
forming in said layer first openings of a given width which completely penetrate said layer to define first trench locations and second openings of said given width which incompletely penetrate said layer to define second trench locations, said first openings permitting reactive ion etching of said underlying substrate in an amount different from the amount of reactive ion etching of said underlying substrate permitted by said second openings,
reactive ion etching said layer and said substrate to form in said substrate a plurality of equal width trenches having different depths relative to each other, and
thermally oxidizing the walls of said trenches so as to completely fill in said trenches with thermally grown silicon oxide at substantially the same time.

9. The process comprising:
providing a silicon substrate,
placing an apertured mask on said substrate,
reactive ion etching said substrate through said mask to form a uniformly spaced series of trenches of the same width and of the same depth, and
thermally oxidizing the walls of said trenches so as to completely convert the silicon between said trenches to silicon oxide.

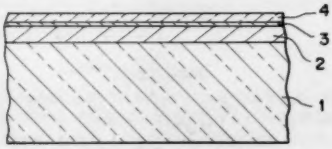
14. The process of reactively ion etching a channel into a semiconductor structure, said structure comprising a plurality of layers in overlying relationship,
one of said layers having higher conductivity than the conductivity of another of said layers,
placing an apertured mask on said structure,
reactively ion etching said structure through said mask, and
periodically interrupting said reactive ion etching during the time when said one of said layers is being penetrated by said etching.

4,139,443

PHOTOMASK BLANKS AND METHOD OF PREPARING THE SAME

Kunio Sakurai, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1977, Ser. No. 834,158
Claims priority, application Japan, Sep. 27, 1976, 51-114701
Int. Cl.[2] C23C *15/00, 13/02, 13/04*
U.S. Cl. 204—192 C 5 Claims



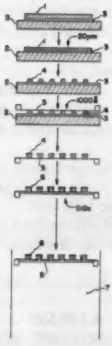
1. A photomask blank comprising a transparent substrate, a first chromium film formed on said substrate by sputtering, a second chromium film formed on said first chromium film by vacuum evaporation, and a chromium oxide film formed on said second chromium film by vacuum evaporation.

4,139,444

METHOD OF RETICULATING A PYROELECTRIC VIDICON TARGET

Barry M. Singer, New York, and Yannick J. Thefaine, Beacon, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,542
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 E 6 Claims



1. In the manufacture of a target for a pyroelectric vidicon, the steps of attaching a layer of pyroelectric target material to a support substrate, reducing the thickness of said layer to about 20 μm, etching through a mask to thereby reticulate the target, forming an electron-pervious polymer layer over said layer of reticulated pyroelectric material, and removing the layer of reticulated pyroelectric material from said support substrate.

4,139,445

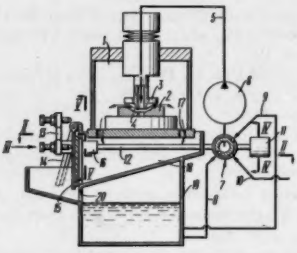
Patent Not Issued For This Number

4,139,446

DEVICE FOR ELECTROLYTIC TREATMENT OF WORKPIECES

Vladimir I. Suslin; Alexandr I. Dubovik; Boris A. Makeev; Pavel S. Razdymakha; Zinovy A. Lekarev; Vitaly A. Pilipenko, and Alexandr I. Etnaer, all of Kharkov, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Avtomatizatsii Upravlenia I Proizvodstva Niiap, U.S.S.R.

Filed Jul. 13, 1977, Ser. No. 815,448
Int. Cl.[2] B23P *1/04, 1/16*
U.S. Cl. 204—224 R **3 Claims**



1. A device for electrolytic treatment of workpieces with at least two liquid media and a gas under pressure, said gas being supplied within a time period between alternate feeding of said two liquid media, comprising:

a working chamber for accommodating a workpiece:

a tool located in said working chamber and, jointly with said workpiece, defining a working space:

a common pipe for alternate feeding of two liquid media and a gas under pressure into said working space:

a first pipe for the first liquid medium, connected to said common pipe;

a second pipe for the second liquid medium, connected to said common pipe at a coupling joint with said first pipe;

a third pipe for a gas under pressure connected to said common pipe at said coupling joint;

an intermediate container;

individual containers for each liquid medium;

a means for alternating the supply of said two liquid media to said workpiece and their discharge after treatment of said workpiece through said intermediate container into said individual containers for each liquid medium;

a distribution valve in the last-mentioned means for alternating the feeding and discharge, installed directly at said coupling joint of said pipes;

a control element in said last-mentioned means for alternating the feed and discharge, kinematically linked with said distribution valve for alternate opening by the latter of said pipes for the liquid media and gas in a predetermined order; and

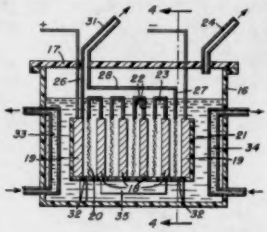
a mechanism for separating the discharge of the different liquid media incorporated into said means for alternating the feeding and discharge, kinematically linked with said distribution valve and control element.

4,139,447

ELECTROLYZER FOR INDUSTRIAL PRODUCTION OF FLUORINE

Robert Faron, Nyons, and Annie Cathala, Livron, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Mar. 12, 1976, Ser. No. 666,495
Claims priority, application France, Mar. 21, 1975, 75 09564; Mar. 10, 1976, 76 07582
Int. Cl.[2] C25B *1/24, 9/00*
U.S. Cl. 204—239 **9 Claims**



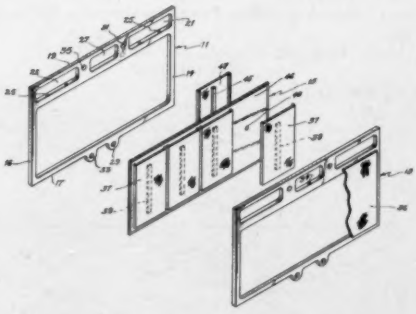
1. An electrolyzer for the production of fluorine from a low temperature fused anhydrous electrolyte comprising a tank for containing the electrolyte and comprised of walls having electrically insulated surfaces generally inert to the electrolyte, at least two monopolar electrodes adapted to be connected to a source of direct current and a plurality of bipolar electrodes positioned between the monopolar electrodes, said electrodes being positioned in said tank for immersion in the electrolyte wherein anodic and cathodic zones are established, means for substantially precluding gas diffusion between the anodic and cathodic zones, means for separately collecting gases evolved from the anodic and cathodic zones, and means for limiting the working temperature of the electrolyte.

4,139,448

SEPARATING WEB - ELECTROLYTIC COMPARTMENT FRAMES ASSEMBLY FOR ELECTROLYTIC APPARATUSES

Bruce S. Wallace, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,423
Int. Cl.[2] C25B *1/16, 1/26, 9/00, 9/04*
U.S. Cl. 204—256 **14 Claims**



1. An assembly of electrolyte compartment frames and a separating web for an electrolytic apparatus which comprises an anolyte compartment frame, a catholyte compartment frame and a separating web between them to prevent passage of electrolyte between such compartments, which separating web is capable of being held by pressure in liquid-tight relationship to the anolyte compartment and catholyte compart-

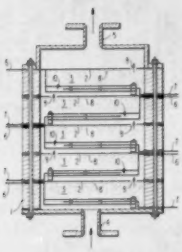
ment frames while being movable between them to compensate for expansion and contraction of the web without distortion of the web and without loss of liquid-tight separation of the anolyte and catholyte compartments by the web.

4,139,449

ELECTROLYTIC CELL FOR PRODUCING ALKALI METAL HYPOCHLORITES

Nobutaka Goto, and Michiru Naito, both of Tokyo, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Jan. 20, 1978, Ser. No. 871,166
Claims priority, application Japan, Feb. 17, 1977, 52-15497
Int. Cl.[2] C25B *9/00, 11/03*
U.S. Cl. 204—270 **10 Claims**



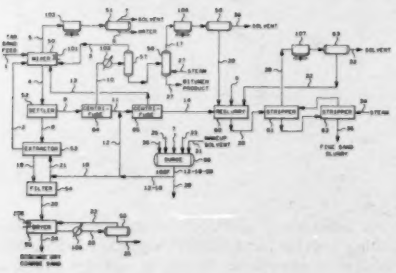
1. An electrolytic cell comprising a plurality of vertically aligned unit cells, each of which includes at least one anode and at least one cathode disposed horizontally therein, the lowermost unit cell having an opening for inflow of an electrolyte solution and the uppermost unit cell having an opening for the outflow of the electrolyte solution, the individual unit cells being partitioned by partitioning plates having an opening for the passage of electrolyte solution; wherein the anode and the cathode have a structure that does not obstruct the upward flow of gas, each unit cell including a gas reservoir zone above the anode and the cathode, and the cathode area that takes part in electrolysis is not present in a passageway through which the gas rises in the unit cells through the electrolyte solution flow openings.

4,139,450

SOLVENT EXTRACTION OF TAR SAND

Donald O. Hanson, and Fred T. Sherk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 12, 1977, Ser. No. 841,512
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—11 LE **9 Claims**



1. A process for recovering bitumens from tar sands containing water comprising the steps of:

(a) mixing the tar sand with a hydrocarbon solvent heated sufficiently to evaporate off substantially all of the water contained in the tar sands;

(b) separating the tar sands-solvent mixture into two phases, the first a fine sand-bitumen-solvent phase, and the second a solvent wet-coarse sand phase;

(c) extracting the solvent wet-coarse sand phase with a hydrocarbon solvent in order to extract bitumen from the coarse tar sands and remove substantially all the remaining fine sand;

(d) separating the solvent from the coarse sand in the resulting coarse sand-solvent mixture of step (c);

(e) subjecting the fine sand-bitumen-solvent phase in step (b) to an initial centrifuging step to yield an overflow containing product bitumen in solvent; and

(f) subjecting the fine sand fraction recovered from the bottom of the centrifuge in step (e) to a second centrifuging step to thereby remove substantially all the remaining bitumen.

4,139,451

METHOD FOR DEWATERING COKE TAR-WATER MIXTURES

Audrone M. Pavilcius, Chicago, and William H. Lindenberger, Darien, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 12, 1977, Ser. No. 859,418
Int. Cl.[2] C10C *1/02*
U.S. Cl. 208—39 **5 Claims**

1. A method for dewatering tar obtained as a by-product in the production of foundry and metallurgical coke from coal which comprises:

A. Collecting a tar-water mixture containing greater than 5% by weight water as a by-product from the production of coke from coal;

B. Adding to said tar-water mixture from 150 to 3,000 ppm of a di-tri butyl ethoxylated phenol said di-tri butyl ethoxylated phenol having been prepared by reacting a mixture of di and tri butyl phenols with from 4–20 moles of ethylene oxide per mole of phenol, said di-tri butyl ethoxylated phenol being present in a 20–60% by weight aqueous solution;

C. Heating said tar-water mixture to a temperature of from 130°-250° F. to increase its fluidity;

D. Agitating said tar-water mixture to mix it with the phenol compound of step B;

E. Continuing steps C and D for a period of time to allow interaction of the compound of step B with the tar-water mixture;

F. Discontinuing agitation, thereby allowing the water contained in the tar-water mixture to rise to the surface forming an aqueous upper phase and a lower dewatered tar phase;

G. Removing said aqueous upper phase; and,

H. Recovering a dewatered tar.

4,139,452

PROCESS FOR PRODUCING BENZENE

Harold Beuther, Gibsonia, and Angelo A. Montagna, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 688,106, May 19, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,602
Int. Cl.[2] C10G *13/24, 13/26;* C07C *15/04*
U.S. Cl. 208—107 **5 Claims**

1. A process for preparing benzene from a hydrocarbon stock selected from the group consisting of FCC Furnace Oils, FCC Decanted Oils and coal liquids derived from the hydrogenation of coal, which comprises heating such hydrocarbon stock, together with hydrogen, in a non-catalytic bed at least to a temperature of about 700° C. while maintaining an average reaction temperature of about 650° to about 1100° C., a total pressure of about 800 to about 2500 pounds per square inch

gauge, a hydrogen partial pressure of about 500 to about 2000 pounds per square inch, with the ratio of the hydrogen in the gas feed to that theoretically required for substantially complete conversion of all of the carbon in the liquid feed to methane being at least about 0.50 and a residence time of three to about 120 seconds.

4,139,453

HYDROREFINING AN ASPHALTENE- CONTAINING BLACK OIL WITH UNSUPPORTED VANADIUM CATALYST

Le Roi E. Hutchings, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 5, 1978, Ser. No. 912,706
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—213 **3 Claims**

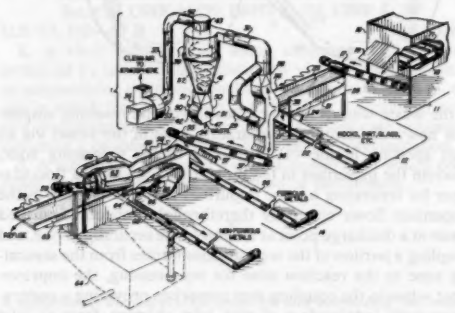
1. A process for hydrorefining an asphaltene-containing black oil which comprises admixing said black oil with from about 2% to about 20% by weight of water, and reacting the resulting mixture with hydrogen in contact with a colloidally dispersed unsupported vanadium catalyst at hydrorefining conditions.

4,139,454

RECLAIMING SYSTEM FOR SCRAP METALS

Robert W. Larson, 605 S. Eldorado Rd., Mesa, Ariz. 85202

Filed Oct. 6, 1977, Ser. No. 840,109
Int. Cl.[2] B03B *9/06*
U.S. Cl. 209—12 **4 Claims**



1. A reclaiming system for recycling scrap material comprising in combination:

a hopper for receiving shredded material,

a first conveyor means for moving said material out of said hopper onto a second conveyor means,

said second conveyor means comprising a pair of conveyors positioned in a vertical array one above the other and means for shaking said first conveyor,

one of said conveyors having perforations of a given size for dropping smaller first portion of said material therethrough onto the other of said conveyors for discharging into an intake hopper,

said one of said conveyors depositing a second portion of said material into an air processing tower,

means for generating air turbulence in said air processing tower for separating the heavier portions of said second portion of said material from the lighter portions, said tower discharging said lighter portions into a circulator and said heavier portions onto a third conveyor means,

said circulator spiraling said lighter portions and through centrifugal action separating a substantially cleaned air stream for discharge into the atmosphere and discharging said lighter portions,

a magnetic means mounted at the discharge end of said third conveyor means for attracting magnetically ferrous material moving along said third conveyor means at the discharge end thereof and holding said ferrous material on said third conveyor means to discharge it at a point beyond said discharge end thereof,

the non-magnetic materials moving along said third conveyor means being discharged on to a shaker conveyor,

said shaker conveyor being perforated to discharge through its perforations small particles of metal of said non-magnetic materials of a given size and discharging the remainder into a rotating drum,

said rotating drum being angularly positioned for receiving said remainder,

said drum receiving a given charge of turbulent water which discharges all material received less dense than metal through its elevated end for discharge onto a fourth conveyor means,

all heavier pieces of said material received by said drum gravitating to its lower end of discharge onto a fifth conveyor means.

4,139,455

MATERIALS AND PROCESSES FOR FLOTATION OF MINERAL SUBSTANCES

Robert M. Griffith, Bradford; Christopher Parkinson, Halifax, and Ronald A. Palmer, Bradford, all of England, assignors to Allied Colloids Limited, Bradford, England

Filed Nov. 4, 1975, Ser. No. 628,614
Claims priority, application United Kingdom, Nov. 19, 1974, 49981/74
Int. Cl.[2] B03D *1/06*
U.S. Cl. 209—167 **8 Claims**

1. A method of concentrating a metaliferous sulphide or oxidized sulphide ore containing desired metal oxide or sulphide selected from copper, nickel, and lead oxides and sulphides, and containing also substantial quantities of one or more impurities selected from the group consisting of pyrites, pyrrhotite and sphalerite; which comprises subjecting an aqueous pulp of the ore to a froth flotation process in the presence of a collector and a depressant for said impurities, the depressant being an amine polymer containing amine groups, said polymer being homopolymers or copolymers in which at least 50% of the monomers from which they are made contain amine groups, and wherein at least 20% of the total number of amine groups in the depressant are tertiary amine groups and the number of quaternary amine groups present is zero or is less than one-third the number of tertiary amine groups, whereby the impurities are depressed while the desired metal oxide or sulphide is collected and separated therefrom.

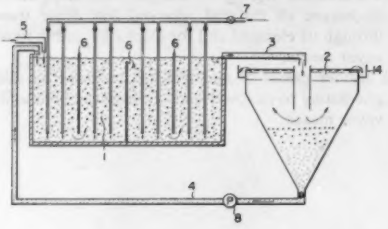
7. A method of treating a zinc ore containing sphalerite and substantial quantities of one or more impurities selected from the group consisting of pyrites and pyrrhotites; which comprises subjecting an aqueous pulp of the ore to froth flotation in the presence of a collector and a depressant for said impurities, the depressant being an amine polymer containing amine groups, said polymer being homopolymers or copolymers in which at least 50% of the monomers from which they are made contain amine groups, and wherein at least 20% of the total number of amine groups in the depressant are tertiary amine groups and the number of quaternary amine groups present is zero or is less than one-third the number of tertiary amine groups, and also in the presence of an activator for the sphalerite, whereby the impurities are depressed while the sphalerite is collected and separated therefrom.

4,139,456

PROCESS FOR OXIDATION TREATMENT OF Fe^{2+} IN WASTE WATER

Eizo Yabuuchi, and Katsutake Fukuda, both of Okayama, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 631,903, Nov. 14, 1975, abandoned. This application Jul. 15, 1977, Ser. No. 816,137
Claims priority, application Japan, Apr. 30, 1975, 50-52308
Int. Cl.² C02C *1/04*
U.S. Cl. 210—7 **2 Claims**



1. A process for the oxidation with iron bacteria of the Fe^{2+} contained in mine and other similar factory effluents at a pH of 2.0 or lower to provide little precipitation of basic salts, characterized by the following steps:

passing the stream of waste water, at said pH, to be treated to an oxidation and culture zone which includes a bed of a particulate material consisting essentially of an acid-resistant, porous and particulate diatomaceous earth having a specific surface area of from about 14,000 to about 370,000 cm^2/g. for the iron bacteria;

oxidizing the Fe^{2+} by agitating and blowing air into the waste water with said particles suspended therein to culture the iron bacteria which inhabit the particles and utilize the Fe^{2+} in the waste water as the energy source and at the same time to lower the Fe^{2+} content of the waste water;

transferring the treated suspension of the iron bacteria-bearing particles from the oxidation and culture zone to a sedimentation zone;

recovering the Fe^{3+}-containing oxidized waste water in the sedimentation zone by precipitation to separate the particles from the treated suspension; and

returning the separated particles which the iron bacteria inhabit to the oxidation and culture zone.

4,139,457

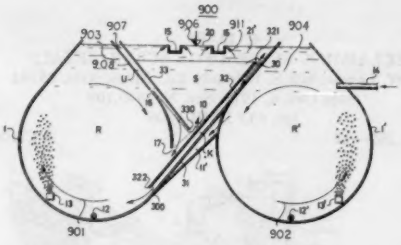
METHOD OF AND APPARATUS FOR PURIFYING WASTE WATER

Svatopluk Mackrle, Brno; Vladimir Mackrle, Prague, and Oldrich Dracka, Brno, all of Czechoslovakia, assignors to Agrotechnika, narodny podnik, Zvolen, Czechoslovakia

Continuation-in-part of Ser. No. 720,510, Sep. 3, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,427
Claims priority, application Czechoslovakia, Sep. 3, 1975, 5998/75
Int. Cl.² C02B *3/06*; B01D *21/26*
U.S. Cl. 210—20 **10 Claims**

1. A reaction vessel for purifying waste water, said vessel having a wall, comprising first partition means defining a downwardly converging separating zone for separating impurities from the waste water, the first partition means having in its lower portion a first opening for admitting waste water to be advanced upwardly through said separating zone, means having walls including a portion of the vessel wall and cooperating with the first partition means for defining at least one reaction zone having a first region below the separating zone, the cross-sectional area of the first opening being less than 10% of the maximum cross-sectional area of the separating zone and less than 10% of the maximum cross-sectional area of the reaction zone, means in communication with the reaction vessel for admitting waste water into the reaction zone, agitating means disposed in the reaction zone for establishing therein a swirl of the waste water therein, a second interface partition means communicating between the reaction zone and the first opening in the separating zone for directing a portion of the water in the reaction zone toward the first opening and into the separating zone, means disposed at the upper end of the separating zone for discharging purified water, and recirculating means extending downwardly from a portion of the separating zone for feeding back to the first region of the reaction zone a portion of the separated impurities in the separating zone into the swirl of waste water in the reaction zone, the recirculating means being so constructed and arranged that a pressure drop is produced between the first opening and the outlet of the recirculating means to prevent impurities in the separating zone from returning to the reaction zone through the first opening.

10. In a method of purifying waste water comprising the steps of agitating a flow of waste water introduced into a reaction zone in a vessel to form a suspension of the impurities



in the waste water, flowing a portion of the resulting suspension upwardly through a separating zone in the vessel via an inlet aperture in the vessel leading to the separating zone, wherein the impurities in the separating zone form a floccular layer for separating out the impurities in the suspension as the suspension flows upwardly therethrough, collecting purified water at a discharge point at the top of the separating zone, and coupling a portion of the separated impurities from the separating zone to the reaction zone for reprocessing, the improvement wherein the coupling step comprises providing a recirculation path, independent of such inlet aperture, from an inlet point disposed at an upper portion of the separating zone below the discharge point to an outlet point communicating with the reaction zone, and establishing a pressure drop between such inlet aperture and such outlet point to prevent fluid in the separating zone from returning to the reaction zone through such inlet aperture by restricting the cross-sectional area of the inlet aperture to below 10% of the maximum cross-sectional area of the separating zone and below 10% of the maximum cross-sectional area of the reaction zone.

4,139,458

PREPARATIVE CENTRIFUGAL CHROMATOGRAPHY DEVICE

Shuyen Harrison, 840 Moana Ct., Palo Alto, Calif. 94306

Filed Oct. 3, 1977, Ser. No. 838,946
Int. Cl.² B01D *15/08*
U.S. Cl. 210—31 C **18 Claims**

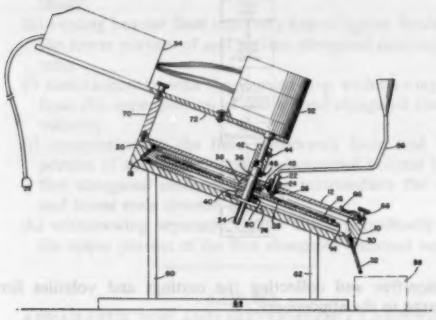
16. In the method of separating and collecting components of a mixture by centrifugal chromatography the steps of:

(a) applying a mixture to be separated to the central area of a rotor mounted for rotation and subsequently applying a carrier for the mixture to the rotor;

(b) separating the mixture by means of differential migration of the components of the mixture through an absorbent medium on the rotating rotor utilizing centrifugal force;

(c) deflecting the eluted components down into an annular

collection trough which is canted at an angle to the horizontal plane by means of a deflection surface as the eluted components are thrown off the rotating rotor; and



(d) draining the collected components from the annular collection trough by the effect of gravity.

4,139,459

QUINOLIZINIUM ANION EXCHANGE RESINS AND MONOMERS AND METHODS FOR MAKING THEM

Charles R. Costin, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 550,493, Feb. 18, 1975, Pat. No. 4,046,766. This application Jun. 22, 1977, Ser. No. 808,938

Int. Cl.[2] **C08F** *26/00;* **B01D** *15/04;* **C08F** *8/28*

U.S. Cl. 210—37 R **8 Claims**

1. A vinyl quinolizinium anion exchange resin polymer produced by quaternizing substituted vinyl pyridine polymer or polymerizing a prefunctionalized vinyl quinolizinium monomer in which the vinyl group, $—CH=CH_2$, is bonded directly to a quinolizinium ring carbon atom, in either case optionally including a crosslinking comonomer in the polymerization.

7. A method of preparing a quinolizinium resin which comprises quaternizing with a compound of the formula:

$$R_1CHR_2$$
$$|$$
$$X$$

A substituted vinyl pyridine polymer and subjecting the resulting product to a condensation reaction with a compound of the formula:

$$R_3C—CR_3$$
$$\| \quad \|$$
$$O \quad O$$

to obtain the resin having quinolizinium functionality, where R_1 is any activating group and may be alkoxy, carbonyl or cyano; where R_2 and R_3 are hydrogen, lower alkyl, phenyl, substituted lower alkyl, alkoxy or cyano groups; where R_1, R_2 and R_3 may be the same or different; and where x is hydroxyl or halogen.

4,139,460

METHOD FOR DECONTAMINATING WASTE MATERIAL FROM CHROMIUM MINERAL PROCESSING BY WET TREATMENT WITH SULPHUR

Giovanni Ghelli, Savona, Italy, assignor to Luigi Stappani di P. Stappani & C., Milan, Italy

Filed Feb. 18, 1977, Ser. No. 770,040

Claims priority, application Italy, Feb. 24, 1976, 20516 A/76

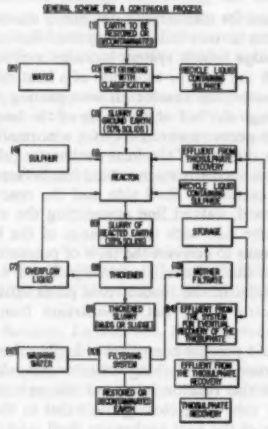
Int. Cl.[2] **C02B** *1/20*

U.S. Cl. 210—45 **11 Claims**

1. A process for decontaminating waste material containing water-soluble hexavalent chromium as a contaminant and constituting the residue obtained after subjecting a chromium mineral to an alkaline roasting treatment in an oxidizing environment at a temperature up to about 1100° C and then leaching the resulting roasted product with water, said process comprising:

(a) wet grinding and classifying the waste material with an aqueous liquid to obtain an aqueous slurry of the ground waste material containing about 50% by weight of solids and in which the granulometrical distribution of the particles is such that not more than 5 to 10% of the particles have an average larger than 0.2 mm and less than 0.4 mm. and 40 to 60% of the particles have an average size less than 0.08 mm.;

(b) reacting the aqueous slurry of the ground and classified waste material obtained in step (a) with an aqueous emulsion containing a metallic sulphide selected from the group consisting of an alkali metal sulphide and an alkaline earth metal sulphide and elemental sulphur in solid or molten form in an amount of about 5 parts of sulphur per 100 parts of the waste material on a dry weight basis, at a temperature of about 100° C. for about from 1 to 4 hours with vigorous stirring, to obtain a reaction product comprising an aqueous slurry of the waste material having a solids content of about from 30 to 35% by weight and



containing water-insoluble trivalent chromium hydrate and thiosulphate and sulphide ions;

(c) thickening the reaction product obtained in step (b) to a solids content of about 50% by weight to obtain a thickened slurry of the waste material containing the water-insoluble trivalent chromium hydrate and the thiosulphate and sulphide ions, and an overflow liquid containing sulphide ions which is recycled to step (b);

(d) filtering the thickened slurry to obtain the waste material containing the water-insoluble trivalent chromium hydrate in an essentially decontaminated form and a mother liquor;

(e) recycling a sufficient amount of the mother liquor obtained in step (d) to step (a) to serve as the aqueous liquid for adjusting and maintaining the recited solids content of 50% by weight;

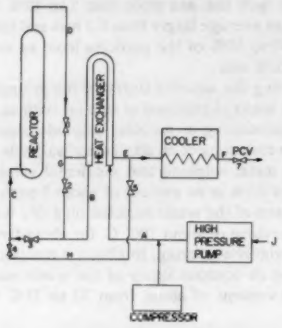
(f) recycling a sufficient amount of the mother liquor obtained in step (d) to step (b) for adjusting and maintaining the recited solids content of 30 to 35% by weight; and

(g) recycling a portion of the mother liquor obtained in step (d) to a thiosulfate recovery system to recover the thiosulphate and leave a liquid effluent which is recycled to step (b).

4,139,461
REMOVAL OF SOLIDS FROM A WET OXIDATION REACTOR

Gerald L. Bauer, Rothschild, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,497
Int. Cl.[2] C02B 1/34
U.S. Cl. 210—63 R 6 Claims



1. A process for discharging unwanted slurried solids accumulation from a wet oxidation system for conditioning or oxidizing sludge which system includes a pressurized sludge flow through the cold or tube side of a heat exchanger to the inlet of a reactor; the reactor effluent passing from the outlet thereof through the hot or shell side of the heat exchanger to an adjustable pressure control valve; a normally open valved line between the exit of the heat exchanger tube side and the reactor inlet; a normally open valved line between the entrance of the heat exchanger shell side and the reactor outlet; and normally closed, valved line connecting the exit of the heat exchanger tube side with the entrance of the heat exchanger shell side, means to convert the flow of pressurized sludge to a flow of clean flush water, a normally closed valved line connecting the inlet of the reactor to a point upstream from the pressure control valve but downstream from the heat exchanger,

wherein said process comprises changing the sludge flow to an alternate clear flushing water source; closing the valve between the reactor inlet and the exit of the heat exchanger tube side; closing the valve in the line between the inlet of the heat exchanger shell side and the reactor outlet, opening the valve in the line between the heat exchanger tube outlet and the heat exchanger shell inlet, opening the valve in the line connecting the reactor inlet with a point upstream from the pressure control valve, and reducing the setting on the pressure control valve, thereby allowing the unwanted slurried solids to be flushed from the reactor to be mixed with, diluted by and cooled by the flush water stream prior to flushing from the system through the pressure control valve.

4,139,462
METHOD FOR THERMALLY TREATING OIL WELL DRILL CUTTINGS

Thomas E. Sample, Jr., Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 12, 1976, Ser. No. 704,267
Int. Cl.[2] F27B 9/24
U.S. Cl. 210—72 6 Claims

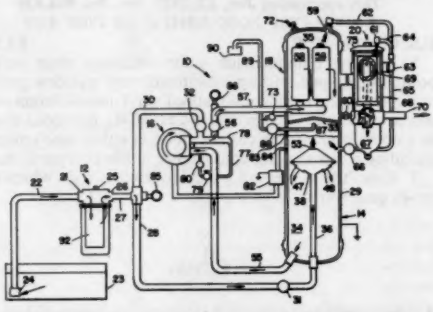
1. A method for thermally treating oil well drill cuttings to transform them from a wet oily condition to a clean substantially oil-free condition, comprising the sequential steps of separating said cuttings from a drilling fluid, feeding the cuttings to a heat chamber having a non-oxidative environment and a temperature of 500 to 700° F. for a period of from about 5 to 15 minutes, continuously moving the cuttings through the chamber until substantially all volatile materials are vaporized and the hydrocarbon residue converted to a form sufficiently

pollution-free and collecting the cuttings and volatiles for discharge to the atmosphere.

4,139,463
METHOD OF AND MEANS FOR OILY WATER SEPARATION

Roger H. Murphy, Modesto, Calif., and Racor Industries, Inc., 02, Modesto, Calif.

Filed Mar. 14, 1977, Ser. No. 777,131
Int. Cl.[2] B01D 23/00, 37/00
U.S. Cl. 210—73 W 21 Claims



1. A method for separating fluids having differing densities, the relatively heavier fluid immiscible in the lighter fluids, comprising the steps of:

(a) providing a first elongated enclosed volume having its axis of elongation vertically oriented;

(b) coupling a source of immiscible fluids with said first elongated enclosed volume intermediate the upper and lower ends thereof;

(c) coupling a pump with the lower portion of said first elongated enclosed volume to draw a flow of fluids through said first elongated enclosed volume so that additional relatively unemulsified immiscible fluids are communicated by suction into the first elongated enclosed volume from said source;

(d) deflecting the flow of said immiscible fluids communicated to said first elongated volume in the interior of said first elongated enclosed volume whereby the relatively heavier fluid communicated to said first volume from said source separates from the relatively lighter fluids concurrently communicated thereto to form a layered mixture of heavier and lighter fluids;

(e) providing a second elongated enclosed volume having its axis of elongation vertically oriented;

(f) communicating the fluid drawn through the first volume into said second elongated enclosed volume under pressure created by the pump;

(g) deflecting the flow of fluid in said second enclosed volume so that coalescing of the light fluids is enhanced to thereby allow additional separation of said immiscible fluids;

(h) venting heavier fluid relatively free of lighter fluids from the lower portion of said second elongated enclosed volume;

(i) simultaneously with the venting step withdrawing fluid from the upper portion of said second elongated enclosed volume;

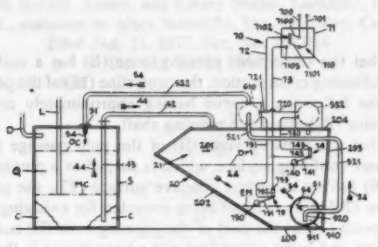
(j) communicating the fluid withdrawn from said upper portion of said second elongated enclosed volume to said first elongated enclosed volume intermediate the upper and lower ends thereof; and

(k) withdrawing separated lighter fluids periodically from the upper portion of the first elongated enclosed volume.

4,139,464
APPARATUS FOR AND METHOD OF CLARIFYING SUMP CONTENT

Michael Coward, Perrysburg, Ohio, assignor to Master Chemical Corporation, Perrysburg, Ohio

Filed Jul. 22, 1977, Ser. No. 818,319
Int. Cl.[2] B01D *37/00, 29/00*
U.S. Cl. 210—74 **4 Claims**



1. In a clarifying apparatus, for service of a material working machine sump to which coolant liquid and material detritus of the machine working is delivered, having

a body;

the body having a chamber;

the chamber having spaced inlet and outlet openings;

a detritus culling filter within the chamber, between and separating the openings;

a conduit in engagement with the body and in communication, at one of the conduit ends, with the chamber inlet and adapted, at the other of the conduit ends, for insertion into the sump and forming, with the body and the chamber thereof, a substantially closed pneumatic and hydraulic system between the sump inserted conduit end and the chamber outlet opening, the combination therewith of:

a pneumatic pump in engagement with the body and having the intake of the pneumatic pump in communication with the chamber and adapted, when actuated, to produce a negative pneumatic pressure of a predetermined, substantially constant pull within the chamber and through the conduit thereby to draw sump content portions through the conduit into the inlet opening side of the filter of the chamber;

a hydraulic pump in engagement with the body having the intake of the hydraulic pump in communication with the outlet opening of the chamber and adapted, when actuated for producing a hydraulic pressure of a predetermined, substantially constant and greater pull within the chamber than the pull generated within the chamber by the pneumatic pump thereby to draw the sump content within the chamber through the filter and outwardly through the chamber outlet notwithstanding the negative pneumatic pressure within the chamber generated by the pneumatic pump and;

a second conduit, of which one end is in engagement with the hydraulic pump and is connected to and communicates with the hydraulic pump discharge and with the sump,

whereby, when both pumps are actuated, a clarified liquid component of the sump content drawn into the chamber from the sump is returned to the sump at a volume rate per unit of time approximately equal to the volume of the liquid component of the sump content withdrawn from the sump in that unit of time.

3. A method of clarifying content of a sump in service of a material reducing machine comprising the steps of

applying a substantially constant, negative pneumatic pressure of a predetermined pull to a confined space exterior of the sump and along an enclosed passage connecting the confined space and sump to thereby draw sump content along the enclosed passage and into the confined space;

directing the drawn sump content to engage a filter in the confined space;

applying, during the time period in which the negative pneumatic pressure is applied, a substantially constant hydraulic pressure of a predetermined greater pull than the pull exerted by the negative pneumatic pressure to a second enclosed passage connecting the sump and the confined space at a point downstream of the filter; and

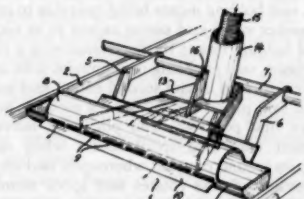
directing the liquid component of the sump content drawn into the confined space along the second enclosed passage to the sump,

whereby the liquid component of the sump content drawn into the confined space is drawn through the filter and returned in clarified condition to the sump at a volume rate per unit of time approximately equal to the volume of the liquid component of the sump content withdrawn from the sump in that unit of time.

4,139,465
METHOD FOR WASHING FILTER-CAKES AND A SPRAY NOZZLE INTENDED FOR USE WITH THE METHOD

Rolf G. J. Nordengren, Landskrona, Sweden, assignor to Nordengren Patenter AB, Landskrona, Sweden

Filed Sep. 15, 1977, Ser. No. 833,544
Claims priority, application Sweden, Nov. 26, 1976, 7613311
Int. Cl.[2] B01D *41/00*
U.S. Cl. 210—81 **6 Claims**



1. In the known method of washing a filter cake that is supported on a liquid permeable conveying means having longitudinally extending side ridges to laterally confine the filter cake and wherein washing liquid is delivered to the surface of the filter cake and the washing caused to pass therethrough by applying a vacuum to the undersurface of the filter cake, the improvement which comprises

(a) delivering washing liquid in slightly turbulent flow to the portions of the filter cake that are adjacent each of said side ridges, and

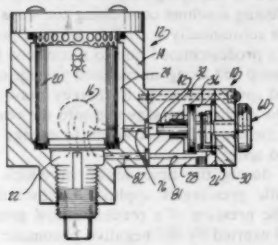
(b) delivering washing liquid to the remaining portion of the filter cake in laminar flow.

4,139,466

DIFFERENTIAL FLUID PRESSURE INDICATING DEVICE

Nils O. Rosaen, 7108 Bridge Way, Pebble Creek, W. Bloomfield, Mich. 48033

Filed Sep. 8, 1977, Ser. No. 831,385
Int. Cl.[2] B01D *35/00*
U.S. Cl. 210—90 **7 Claims**



1. A differential fluid pressure indicating device comprising:
a housing having a main chamber formed therein;
a piston axially slidably disposed in said main chamber which divides the main chamber into an inner and outer fluid chamber, said piston being movable between a first and a second axial position in the main chamber;
means for rotatably constraining said piston;
resilient means for urging said piston toward said first position;
means for communicating a first fluid pressure to the inner chamber;
means for communicating a second fluid pressure to the outer chamber;
indicating means comprising a spool shaped member having a first enlarged diameter end positioned exteriorly of said housing and a second enlarged diameter end being positioned within the outer fluid chamber, said spool shaped member being movable between a first rotational position and a second rotational position;
further resilient means for urging said spool member from its first and to its second rotational position; and
means carried by the piston for holding said spool member in its first rotational position when said piston is in its first position, said holding means being operable to release said spool member when said piston moves to its second position, said holding means further comprising a pin carried by said piston, said pin being in alignment with and engaging a recess formed in said second end of said spool member when said piston and said spool member are in their respective first positions, said pin being moved out of engagement with said spool recess when said piston moves to its second position whereupon said second mentioned resilient means rotates said spool member to its second rotational position.

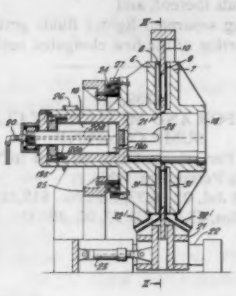
4,139,467

DISC PRESS FOR CONTINUOUS PRESSING OF AQUEOUS OR SUSPENDED PULP

Bjørn H. Fritzvold, Hosle; Arne Lynghjem, Oslo; Oystein Johnsen, Oslo, and Leif H. Eriksen, Oslo, all of Norway, assignors to Myrens Verksted A/S, Oslo, Norway

Filed Feb. 17, 1978, Ser. No. 878,771
Claims priority, application Norway, Feb. 18, 1977, 770554
Int. Cl.[2] B01D *25/12, 25/14, 25/38, 33/26*
U.S. Cl. 210—97 **11 Claims**

1. Disc press for continuous pressing of aqueous or suspended pulp for fractionating the pulp in a fluid fraction and a dry substance fraction, comprising two plane parallel pressing discs having strainer plates which are rotatably mounted on a shaft and which haul the mass therebetween by friction, and inner and outer pressing means extending between the strainer plates and together with the latter defining a curved pulp passage which in the transport direction has a varying cross section and is constituted by a filling or dewatering zone, a pressing zone and a discharge zone, characterized in
(a) that the passage zones (A, B, C) of the pulp passage combined extend throughout an angle less than 360°,
(b) that the filling or dewatering zone (A) has an approximately constant cross section,



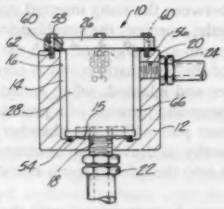
(c) that the subsequent pressing zone (B) has a uniformly decreasing cross section, the centerline (**15**) of the pressing zone following a curve having approximately constant radius (R_1) about the rotating shaft,
(d) that the pressing zone (B) of the pulp passage has an outer confining surface which is shaped as a pivoted arm (**10**) having a curved concave surface (**17**), the pivoted arm (**10**) at its one end being mounted for swinging about a point (**11**) at the start of the pressing zone (B) and at its other end being connected to a power means in the form of an adjustable hydraulic cylinder (**14**) which holds the arm (**10**) with a predetermined force and which when the pulp pressure in the press exceeds a predetermined value, will influence and displace the pivoted arm (**10**).

4,139,468

FLUID FILTERING DEVICE

Nils O. Rosaen, 7108 Bridge Way, West Bloomfield, Mich. 48033

Continuation-in-part of Ser. No. 669,610, Mar. 23, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,125
Int. Cl.[2] B01D *27/10*
U.S. Cl. 210—130 **8 Claims**



1. A fluid filtering device for use with a fluid system having a body which defines a chamber open on one end and a fluid inlet port and a fluid outlet port in fluid communication with the chamber, said fluid filtering device consisting of;
a housing formed by molding a plastic cap onto and across one axial end of a tubular cage so that said end of said cage is embedded in said plastic cap,

a tubular filter element disposed coaxially within the interior of said cage,

nondetachable means secured to the other axial end of the cage for entrapping said filter element within the interior of the cage,

a fluid bypass means contained within the interior of said cage for permitting fluid communication to bypass said filter element in response to a predetermined fluid pressure differential across said filter element said bypass means being fixedly secured to said cap above one end of the filter element,

wherein said cage is dimensioned so as to be insertable into said body chamber and so that, upon insertion, said filter element is positioned between the fluid inlet port and the fluid outlet port while said cap covers the open end of the chamber, and

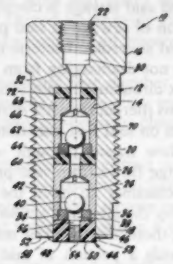
wherein said housing, filter element and bypass means are joined together to form a unitary, single piece member which must be disposed within said chamber only as a single piece, whereby when said filter element or said bypass means become inoperative replacement of the entire fluid device is required and wherein said fluid system will not operate without the fluid device secured to the body.

4,139,469

FLUID CONTROL MECHANISM

Kenneth Rainin, Alamo, and Emery Major, Larkspur, both of Calif., assignors to Altex Scientific, Inc., Berkeley, Calif.

Filed Jan. 21, 1977, Ser. No. 761,014
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—136 **9 Claims**



1. A fluid control mechanism for use in a high pressure fluid system comprising:

a. housing having an opening therethrough, said housing having a first chamber communicating with said opening, and having at least one exterior face adjacent said opening;

b. a first seat positioned within said housing opening, said first seat including a restricted passage therethrough communicating with said first chamber and said housing opening;

c. a first plug disposed within said first chamber, said first plug adapted to occupy said first seat and close said restricted passage through said first seat;

d. filter means for preventing passage of particulate matter through said first chamber and said first seat restricted passage, said filter means comprising a pressure deformable section sized to tightly fit within said housing opening and protruding from said housing opening to the exterior of said housing, said pressure deformable section being adapted to cold flow to said exterior housing face upon the application of pressure on said pressure deformable section, said pressure deformable section having an opening therethrough communicating with said housing opening, said filter means further comprising a relatively rigid filter element disposed in said passage of said pressure deformable section to completely intercept fluid flow through said passage, said filter element occupying a portion thereof adjacent said exterior face and forming a gap therein opposite the portion of said pressure deformable section passage adjacent said housing exterior face, said filter element adapted for at least partially filling said gap upon said application of pressure on said pressure deformable section;

e. pump means for forcing high pressure fluid through said filter means, said housing adapted for engagement with said pump means, said engagement of said pump means with said housing providing said application of pressure on said pressure deformable section.

f. liquid chromatographic means for performing liquid chromatographic separations, said liquid chromatographic means receiving the high pressure fluid from said filter means.

4,139,470

SYSTEM FOR SEPARATING, REMOVING AND RECOVERING CONTAMINANT MATERIALS FROM A BODY OF WATER

Merlin D. Stagemeyer, Northbrook, Ill., and Seth F. Allcorn, Columbia, Mo., assignors to Oil Spill Recovery, Inc., Northbrook, Ill.

Filed Mar. 21, 1977, Ser. No. 779,675
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—170 **25 Claims**

1. A system for removing and recovering contaminant material from the surface of a body of water, comprising:

open-ended apron channeling means maintained afloat in said body of water by apron buoys,

said apron channeling means being substantially impervious to said contaminant material;

contaminant collection means for collecting said contaminant material;

said apron channeling means attached to said contaminant collection means so as to converge thereto,

said collection means including scoop means for skimming said contaminant material from the surface of said body of water as said contaminant material is directed to said collection means by said apron channeling means;

contaminant separator means operably attached to said collection means for separating said contaminant material from said water;

material transport means operably attached to said contaminant separator means for removing said separated contaminant material from said system, thereby enabling the recovery and reuse of said contaminant material as desired;

system activation means for the initiation of movement between said contaminated body of water relative to said channeling, collection and separator means to surround and direct said contaminated body of water to said collection means, said separator means comprising:

a substantially cylindrical-shaped member having a generally open top and bottom with scoop attachment means on a forward side for the pivotable attachment of said scoop means;

entry port means closely adjacent said scoop attachment means to accommodate the inward flow of water and

contaminant material delivered by said scoop means as it skims said body of water;

water buoyancy and stabilization means for maintaining said separator means in a desired position in said body of water and for stabilizing the movement of said separator therein; and

said cylindrical-shaped member of said contaminant separator having proximate to its top outwardly flanged reservoir means for increased storage capacity of said separated contaminant material.

4,139,471

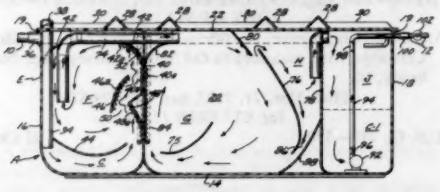
SEWAGE TREATMENT UNIT

Dominick Foti, 5062 Cornell, Westminster, Calif. 92683

Continuation of Ser. No. 720,756, Sep. 7, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,780

Int. Cl.[2] C02C *1/08*

U.S. Cl. 210—170 **3 Claims**



1. In combination with a dwelling having a discharge line through which raw sewage containing aerobic and anaerobic bacteria intermittently flows, a unit for transforming said raw sewage to a substantially colorless and odor free effluent prior to the latter being discharged to a disposal facility, said unit including:

a. a substantially rectangular container that has a bottom, first and second end walls, a pair of side walls, and a top removably secured to said container, said container and top of sufficient strength as to be buried a substantial distance below the ground surface;

b. first and second spaced transverse partitions that extend upwardly from said bottom and between said side walls, said first and second transverse partitions terminating below said top, and a transverse arcuate weir baffle that is intermediately disposed between said first and second partitions, said weir baffle having upper and lower horizontal edges, said weir baffle extending between said side walls, said upper and lower horizontal edges spaced from said top and bottom, said first transverse partition, pair of side walls, bottom and first end wall cooperating to define a primary chamber; said second transverse partition, pair of side walls, bottom and second end wall cooperating to define a holding tank; said first and second partitions, said pair of side walls and bottom cooperating to define a secondary chamber; said arcuate weir baffle and second transverse partition cooperating with said pair of side walls to define a settling tank within secondary chamber and in communication with the latter said first partition having corrugations on both vertically extending sides thereof;

c. a raw sewage inlet tube that extends downwardly into said primary chamber;

d. first and second tubes that extend downwardly into said primary and secondary chambers;

e. a plurality of spaced transverse first, second and third baffles in said primary chamber and a fourth transverse baffle in said secondary chamber intermediate said first partition and said weir baffle with at least a portion of said second and third baffles having corrugated surfaces said first baffle of downwardly convex-concave transverse cross-section and adjacently disposed to said bottom, said second baffle intermediately disposed between said first partition and first end wall above said first partition, and said third baffle secured to said first partition and oppositely disposed from said second baffle and spaced therefrom;

f. first power-operated pump means disposed exteriorly of said container for intermittently discharging air under pressure through said first and second tubes for fixed periods of time, said air as it discharges from said first and second tubes forming bubbles in sewage in said primary and secondary chambers, with the portion of said sewage containing bubbles being lighter than the balance of said sewage and said sewage as a result thereof circulating in first and second closed paths in said primary and secondary chambers said sewage as it flows in said first closed path flowing under said first baffle and then upwardly between said second and third baffles and then downwardly adjacent said first end wall to repeat flowing through said first closed path, said sewage as it flows through said second closed path flowing downwardly along the side of said weir baffle most adjacent said first partition and then under said fourth baffle and upwardly along said first partition and under said top towards said weir baffle partition to again flow through said second closed path said sewage as it circulates in said first closed path in said primary chamber having solid portions thereof reduced in size by contact with said corrugations on said second and third baffles and said first partition, said raw sewage in said primary chamber being subjected to primary disintegration by aerobic bacteria and anaerobic bacteria, said primary disintegration of sewage in said primary chamber taking place by aerobic bacteria during the time periods when air discharges therein from said first tube and said sewage is circulating, and said primary disintegration of sewage in said primary chamber taking place by said anaerobic bacteria during the time periods when air is not discharging from said first tube and said sewage as it circulates in said second closed path having solid portions therein reduced in size by contact with said corrugations on said first partition;

g. first overflow means through which partially disintegrated sewage flows from said primary chamber to said secondary chamber to have the disintegration thereof completed by the alternate action of aerobic and anaerobic bacteria therein in the same manner as in said primary chamber, with a portion of said partially disintegrated sewage in said secondary chamber as it circulates flowing over said weir baffle to enter said settling tank;

h. skimmer means that extend downwardly from said top and below the upper extremity of said weir baffle, said skimmer means disposed in said secondary chamber, and said skimmer means minimizing the entrance of said solid particles of sewage into said settling tank;

i. a fifth transverse baffle in said secondary chamber that cooperates with the portion of said weir baffle adjacent said bottom to form a restricted passage through which sewage discharges from said settling tank at increased velocity as said partially disintegrated sewage circulates in said secondary chamber, said increased velocity resulting in solid particles of sewage that may have entered said settling chamber being returned from said settling chamber to said secondary chamber for further disintegration by moving through said second closed path;

j. second overflow means adjacent said top and said second partition through which effluent substantially free of solid particles of sewage flows from said settling chamber to said holding chamber; and

k. second power operated pump means in said holding chamber, said second power operated power operated power means including a suction and a discharger; and

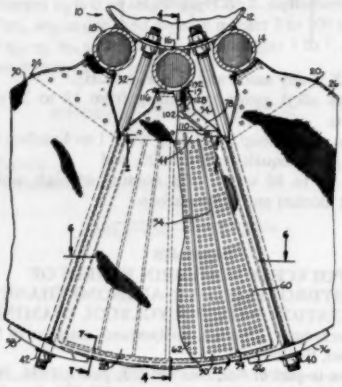
l. a conduit connected to said discharge of said second power operated pump means and extending to an effluent disposal location remote from said container.

4,139,472

FILTER SECTOR

Gordon L. Simonson, Box 17, Frederic, Wis. 54837

Filed Jun. 20, 1977, Ser. No. 808,308
Int. Cl.[2] B01D *39/00*
U.S. Cl. 210—232 **8 Claims**



1. In a rotary disc filter structure wherein a plurality of disc sectors are provided for support of a bag-type filter medium, each of said sectors connected to a filtrate discharge conduit and rotatable into a slurry, said structure including vacuum means for drawing water from said slurry through said bag-type filter medium, said filtered water being channeled by said sectors to said discharge conduit, an improved disc sector comprising:

(a) a generally wedge-shaped base member having an inner discharge end portion, an arcuate outer end portion, a pair of oppositely disposed substantially planar surfaces, and side wall portions;

(b) a plurality of elongated ribs affixed to and relatively widely spaced apart on said planar surfaces and extending between said discharge and said arcuate end portions, said ribs and said planar surfaces defining a plurality of sub-sectors; and

(c) a plurality of projecting members affixed to said planar surfaces and spaced apart and aligned thereon in a plurality of radially spaced rows within each sub-sector, the number of members in each radial row decreasing from said outer end portion toward said inner end portion, each of said projecting members having a contact surface for supporting said bag-type filter medium, said filter medium and said planar surfaces defining a filtrate flow chamber therebetween, said ribs dividing said flow chamber into a plurality of independent flow channels.

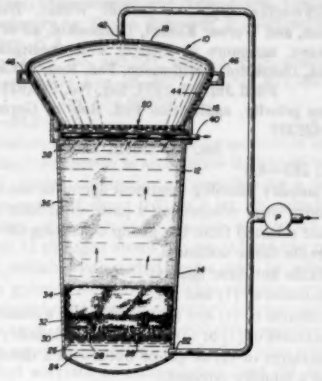
4,139,473

FILTER

Robert L. Alldredge, 130 Pearl St., Apt. 1108, Denver, Colo. 80203

Filed Sep. 12, 1977, Ser. No. 832,221
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—279 **18 Claims**

16. An improved upwash, upflow filter of the kind having graded granular filter media held in stationary position during filter stage and raised from stationary position by wash liquid during wash stage, wherein the improvement comprises: a filter housing containing said granular filter media and having upwardly and outwardly flared sides for reducing the upward velocity of wash liquid passing through the filter media contained between the flared sides during wash stage, wherein the housing has a wash liquid overflow near the upper end thereof and a wash liquid inlet near the lower end thereof and is characterized by a lack of constriction in the upward direction



between the inlet and overflow for allowing improved self-graded settling of the filter media after wash stage.

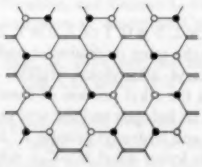
4,139,474

POLY-DICARBON MONOFLUORIDE

Nobuatsu Watanabe, No. 136, Uguisu-dai, Nagaokakyo-shi, Kyoto, Japan, and Yasushi Kita, Hiroshima, Japan, assignors to Nobuatsu Watanabe and Applied Science Research Institute, both of Kyoto, Japan

Filed Aug. 15, 1977, Ser. No. 824,911
Claims priority, application Japan, Feb. 22, 1977, 52/017823
Int. Cl.[2] C09K *3/00;* **C07C** *19/08*
U.S. Cl. 252—1 **5 Claims**

LAYER STRUCTURE OF $(C_2F)_n$ WITH FLUORINE ATOMS BONDING ABOVE(O) AND BELOW(●) A CARBON NETWORK



1. A chemical compound poly-dicarbon monofluoride represented by the formula

$$(C_2F)_n$$

and having a crystalline structure in which a layer structure as shown in FIG. **12** hereof is stacked with an interlayer spacing of about 9.0 A to form a packing structure.

5. A poly-carbon fluoride composition consisting essentially of C_2F stoichiometry and CF stoichiometry, the content of C_2F stoichiometry being more than 50 mole %, based on the composition.

4,139,475
LAUNDRY FINISHING TREATMENT AGENT PACKAGE AND METHOD

Karl Schwadtke, Opladen; Rudolf Weber, Dusseldorf-Holthausen, and Werner Künzel, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 19, 1977, Ser. No. 816,921

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635257

Int. Cl.[2] D06M *13/34*

U.S. Cl. 252—8.6 **17 Claims**

1. A laundry finishing treatment agent for use in a mechanical laundry drier comprising a paste of at least one effective substance selected from the group consisting of:

(1) textile fabric softeners,

(2) textile antistatic agents,

(3) mixtures of (1) and (2),

(4) mixtures of (1) and (2) or both with a disinfectant agent,

(5) mixtures of (1) or (2) or both with a laundry odorant, and

(6) mixtures of (1) or (2) or both with a disinfectant agent and a laundry odorant,

said at least one effective substance being present in an amount sufficient to treat the average laundry processed in said mechanical laundry drier and being mixed with water containing from 0 to 5% by weight of an organic solvent to give said paste, contained in an article of film material having a pillow-like form with one side impermeable to said paste of said effective substance and the other side being a plastic film having a plurality of slits therein of such dimensions, that at room temperature and in the absence of pressure on said article, said slits are substantially closed and obstruct the issuance of said paste from said article.

4,139,476
FIRE RETARDANT POLYOLEFINS

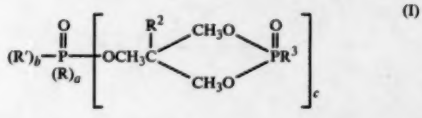
Henry Hancock, 5 Laurel Trail, Kinnelon, N.J. 07405

Filed Sep. 1, 1977, Ser. No. 829,890

Int. Cl.[2] C09K *3/28*

U.S. Cl. 252—8.1 **11 Claims**

1. A flame retardant polyolefin fabric comprising: a polyolefin fabric being coated with a composition comprising a phosphonate ester having the following formula:



(I)

wherein a is 0, 1 or 2, b is 0, 1 or 2, c is 1, 2 or 3 and a+b+c is 3; R and R′ are the same or dissimilar and are alkyl, alkoxy, aryl, aryloxy, alkaryl, alkaryloxy, aralkyl, aryloyxalkoxy, or aralkoxy, wherein the alkyl portion of these groups may contain hydroxyl but no halogen and the aryl portion may contain chlorine bromine and hydroxyl groups; R^2 is alkyl, hydroxyalkyl, or aryl; R^3 is lower alkyl (C_1-C_4); wherein said ester is present in an amount of from 5 to 15 percent by weight of the fabric.

4,139,477
FABRIC CONDITIONING COMPOSITIONS

Mason Hayek, Wilmington; Gordon B. Robbins, Claymont, and Oliver Yeaton, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

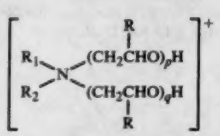
Filed Mar. 16, 1978, Ser. No. 887,331

Int. Cl. D06M *13/34*

U.S. Cl. 252—8.8 **11 Claims**

1. A fabric conditioning composition consisting essentially of

(a) from 20 to 65 wt % of a quaternary ammonium salt of the formula



wherein X is any anion and R is H or CH_3,

R_1 is an alkyl group containing from 12 to 24 carbon atoms,

R_2 is an alkyl group containing from 1 to 4 carbon atoms, and $p + q$ equals from 2 to 20; and

(b) from 35 to 80 wt % of a mixture of high molecular weight alcohol and hydrocarbon.

4,139,478
POLYCHLOROHYDRIN ETHERS OF TRIS-(HYDROXYMETHYL)-AMINOMETHANE IN ASSOCIATION WITH POLYGLYCOL DIAMINES

Richard Hochreuter, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

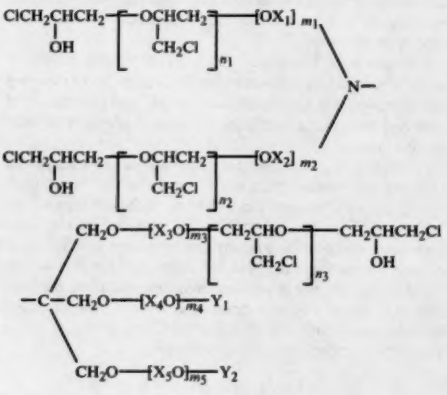
Continuation-in-part of Ser. No. 703,751, Jul. 9, 1976, Pat. No. 4,059,631, which is a division of Ser. No. 503,831, Sep. 6, 1974, Pat. No. 3,987,231. This application Sep. 8, 1977, Ser. No. 831,612

Claims priority, application Switzerland, Sep. 6, 1973, 12813/73

Int. Cl.[2] D06M *13/18, 13/16*

U.S. Cl. 252—8.8 **24 Claims**

1. As an antistatic composition, an aqueous solution containing 1 to 10% by weight of: (a) a mixture of at least one compound of formula I,



I

wherein

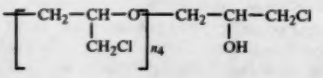
X_1, X_2, X_3, X_4 and X_5 are each, independently, 1,2-ethylene, 1,2-propylene or 1,2-butylene,

m_1 and m_2 are each, independently, an integer 1 to 30,

m_3, m_4 and m_5 are each, independently, 0 or an integer 1 to 30,

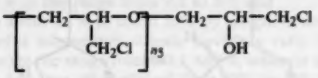
n_1, n_2 and n_3 are each, independently, 0 or an integer 1 or 2,

Y_1 is hydrogen or a radical of the formula

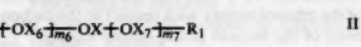


wherein n_4 is 0 or an integer 1 or 2, and

Y_2 is hydrogen or a radical of the formula



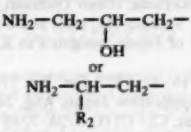
wherein n_5 is 0 or an integer 1 or 2, and wherein the sum of m_1, m_2, m_3, m_4 and m_5 is an integer 2 to 100 and the sum of n_1, n_2, n_3, n_4 and n_5 is 0 or an integer 1 to 7, and at least one compound of formula II,



II

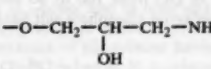
wherein

R is a radical of the formula



wherein R_2 is hydrogen, methyl or ethyl,

R_1 is NH_2— or a radical of the formula



X is alkylene of 2–12 carbon atoms, phenylene, phenyleneoxyphenylene or phenylenesulphonylphenylene,

X_6 and X_7 are each, independently, 1,2-ethylene, 1,2-propylene or 1,2-butylene, and

m_6 and m_7 are each, independently, an integer 1 to 38, the sum of m_6 and m_7 being an integer 2 to 39,

(b) a precondensate of at least one compound of formula I and at least one compound of formula II, (c) a mixture of a precondensate of at least one compound of formula I and at least one compound of formula II, and at least one compound of the formula I or at least one compound of the formula II, or (d) a mixture of a precondensate of at least one compound of formula I and at least one compound of formula II, and at least one compound of the formula I and at least one compound of the formula II, said aqueous solution having a pH of 5.5 to 7.0.

4,139,479

TEXTILE TREATING COMPOSITION

Pierre C. E. Goffinet, and Jean-Pierre C. I. M. Leclercq, both of Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1977, Ser. No. 801,686

Claims priority, application United Kingdom, Jun. 4, 1976, 23176/76; Oct. 29, 1976, 45079/76

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.8 **9 Claims**

1. A textile-treating composition in the form of an aqueous dispersion consisting essentially of (a) from 0.1% to 15% of a fabric-substantive cationic surfactant and (b) from 0.1% to 10% of a substantially water-insoluble di-carboxylate salt based on a carboxylic acid having from 16 to 24 carbon atoms.

4,139,480

MULTIFUNCTIONAL ALTERNATING INTERPOLYMER LUBRICATING OIL ADDITIVE

John B. Gardiner, Mountainside, and Irving Kuntz, Linden, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 603,297, Aug. 11, 1975, abandoned. This application Aug. 25, 1977, Ser. No. 827,786

Int. Cl.² C10M *1/32*

U.S. Cl. 252—51.5 A **8 Claims**

1. A composition comprising a major proportion of lubricating oil and dissolved therein as an additive 0.01 to 49 wt.% of an oil soluble, sludge dispersing, polymer having a nitrogen content in the range of about 0.01 to 8 wt. %, which is the reaction product of: a hydrocarbyl amine of 2 to 60 carbon atoms and 1 to 12 nitrogen atoms having at least one primary amine group, which hydrocarbyl amine may be substituted with hydroxy groups, with an oil soluble chlorine-containing alternating interpolymer having a number average molecular weight in the range of about 700 to 250,000 consisting essentially of about equimolar proportions of (a) an ester which is a C_1 to C_{30} alkyl acrylate or methacrylate, and (b) an olefin mixture consisting essentially of a major molar amount of a C_2 to C_{30} monoolefin of the formula $R—CH=CH_2$ and/or $R'(R'')C=CH_2$ where R, R' and R'' are hydrogen or alkyl groups, and a minor molar amount of vinyl benzyl chloride; wherein 5 to 95 mole % of said chlorine in said interpolymer will react with said amine to thereby give said nitrogen content, and wherein said alternating interpolymer is prepared by copolymerizing said ester and olefin mixture in the presence of a catalyst comprising a mixture of a Lewis acid catalyst and a free radical catalyst selected from the group consisting of peroxide and azo catalysts, whereby said ester alternates with either said C_2 to C_{30} monoolefin or said vinyl benzyl chloride in said interpolymer.

4,139,481

COMBINATIONS OF ALKYLAMIDOALKYL MONOESTERS OF SULFOSUCCINIC ACID AND FATTY ACIDS AS COLLECTORS FOR NON-SULFIDE ORES

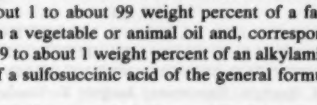
Samuel S. Wang, Cheshire, and Eugene L. Smith, Jr., Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 21, 1977, Ser. No. 862,992

Int. Cl.² B03D *1/02*

U.S. Cl. 252—61 **4 Claims**

1. A collector combination for non-sulfide minerals comprising from about 1 to about 99 weight percent of a fatty acid derived from a vegetable or animal oil and, correspondingly, from about 99 to about 1 weight percent of an alkylamidoalkyl monoester of a sulfosuccinic acid of the general formula:



where R is an alkyl radical of 4 to 18 carbon atoms, R' and R'' are alkylene radicals of 2 to 6 carbon atoms, Y is —NH— or —O—, X is hydrogen, alkali metal or ammonium, and n is 0–2.

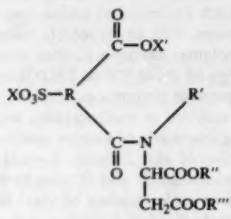
4,139,482

COMBINATION OF A FATTY ACID AND AN N-SULFODICARBOXYLIC ACID ASPARATE AS COLLECTORS FOR NON-SULFIDE ORES

Rudolph N. Holme, Knoxville, Tenn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 21, 1977, Ser. No. 863,032
Int. Cl.[2] B03D *1/02*
U.S. Cl. 252—61 **6 Claims**

1. A collector combination for non-sulfide minerals comprising from about 1 to 99 weight percent of a fatty acid derived from a vegetable or mineral oil, said acid being present in hydrogen form or as an alkali metal or ammonium salt, and, correspondingly, from about 99 to about 1 weight percent of an N-sulfodicarboxylic acid aspartate of the general formula:



wherein X and X′ are members of the group consisting of hydrogen and cationic salt-forming radicals, R is the residue of an aliphatic polycarboxylic acid resulting from removal therefrom of a sulfonic acid group and two carboxylic acid groups, R′ is a member of the group consisting of alkyl, alkoxyalkyl and hydroxyalkyl radicals of from 8 to 20 carbon atoms, and R″ and R‴ are members of the group consisting of hydrogen, alkyl and cationic salt-forming radicals, said N-sulfodicarboxylic acid asparate being in a form compatible with the form of said fatty acid.

4,139,483

ELECTROSTATOGRAPHIC TONER COMPOSITION CONTAINING SURFACTANT

Meurig W. Williams, and Christopher J. AuClair, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1977, Ser. No. 773,083
Int. Cl.[2] G03G *9/08*
U.S. Cl. 252—62.1 P **11 Claims**

1. A finely-divided toner composition comprising a colorant, a thermoplastic resin, and a surface active additive dispersed in said toner composition, said surface active additive being capable of providing a positive triboelectric charging potential to said toner composition, said surface active additive being selected from highly fluorinated materials having an ionic group, said ionic group being selected from a cationic group and an anionic group.

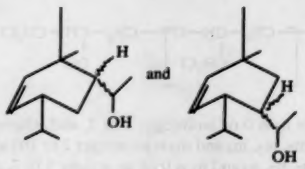
4,139,484

PROCESS FOR ALTERING, MODIFYING OR ENHANCING THE AROMA OF DETERGENTS WITH SUBSTITUTED BICYCLOOCTENE DERIVATIVES

James M. Sanders, Eatontown; Joaquin F. Vinals, Red Bank, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 780,685, Mar. 23, 1977, Pat. No. 4,128,729. This application Jun. 8, 1978, Ser. No. 913,734
Int. Cl.[2] C11D *3/50*
U.S. Cl. 252—89 R **2 Claims**

1. A process for altering, modifying or enhancing the aroma of a soap which comprises intimately admixing soap chips with from 1% up to 3% of a mixture of bicyclo [2.2.2] octene derivatives having the formulae:



wherein the wavy lines represent exo and endo configurations of the ethanol moiety with respect to the carbon-carbon double bond of the bicyclo [2.2.2] octene moiety.

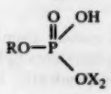
4,139,485

DETERGENT COMPOSITION

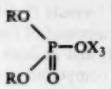
Genji Imokawa, Wakayama; Hisao Tsutsumi, Sakura; Tomihiro Kurosaki, Osaka; Makoto Hayashi, and Junko Kakuse, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1977, Ser. No. 770,455
Claims priority, application Japan, Aug. 24, 1976, 51-101004
Int. Cl.[2] C11D *3/36, 7/36*
U.S. Cl. 252—135 **13 Claims**

1. A detergent composition which has a low irritation effect on human skin, in which the organic surfactant component consists essentially of (A) from 100 to 80 weight percent of monoalkyl or monoalkenyl phosphate salt having the formula



and (B) the balance of from zero to 20 weight percent is dialkyl or dialkenyl phosphate salt having the formula



wherein R is alkyl or alkenyl having an average of from 10 to 16 carbon atoms, X_3 is hydrogen, alkali metal selected from the group consisting of sodium, potassium and lithium, ammonium, alkyl (C_1 to C_3) ammonium or hydroxyalkyl (C_1 to C_3) ammonium, and X_2 is said alkali metal, ammonium, alkyl (C_1 to C_3) ammonium or hydroxyalkyl (C_1 to C_3) ammonium, with the provisos: that said salts have a Krafft point of less than 55° C.; and that aqueous solutions of said salts have a pH of from 5 to 9.

4,139,486

BUILT DETERGENT COMPOSITION

John Bailey, Crawcrook; Leslie H. Cassie; Paul R. Sherrington, both of Newcastle upon Tyne, all of England, and Paul van Roo, Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 22, 1977, Ser. No. 779,961
Int. Cl.[2] C11D *3/075, 7/16*
U.S. Cl. 252—135 **9 Claims**

1. A detergent composition consisting essentially of:
(a) from about 1% to about 70% by weight of the composition of an organic surface active agent selected from the group consisting of anionic detergent and nonionic detergent and mixtures thereof;
(b) from about 5% to about 50% by weight of the composition of a mixture of phosphates selected from the group consisting of sodium orthophosphate, sodium pyrophos-

phate, potassium orthophosphate and potassium pyrophosphate wherein the weight ratio of ortho- to pyrophosphate is in the range from 9:2 to 3:7; and

(c) from about 0.1% to about 10% by weight of the composition of a magnesium silicate having a ratio SiO_2:MgO (molar) in the range from 3.2:1 to 1:4, wherein the composition has free alkalinity of from 6% to 8% NaOH by weight.

4,139,487

MIXED TRI-ARYL (PHENYL AND ALKYLPHENYL) PHOSPHATE ESTERS

Kenneth M. Garrett, Ottawa, Canada, assignor to Albright & Wilson Limited, Oldbury, England

Division of Ser. No. 791,866, Jan. 6, 1969, Pat. No. 3,553,155, which is a continuation of Ser. No. 595,354, Nov. 18, 1966, abandoned. This application Jun. 5, 1970, Ser. No. 43,927

Claims priority, application United Kingdom, Dec. 1, 1965, 51022/65

Int. Cl.² C07F *9/12*

U.S. Cl. 252—182 **19 Claims**

1. A composition consisting essentially of a liquid mixture of a plurality of phenyl alkylphenyl phosphates having the overall general formula $(RO)_3PO$ wherein R is selected from the group consisting of phenyl and secondary alkylphenyl groups, and from 30 to 85 mole percent of the R groups are secondary alkylphenyl groups and the secondary alkyl group has from 3–4 carbon atoms, said mixture being prepared by phosphorylating a mixture of phenol and at least one alkylphenol ROH wherein R is alkylphenyl as defined hereinbefore.

17. A liquid mixture of phosphates having the overall general formula $(RO)_3PO$ wherein R is selected from the group consisting of phenyl and isopropylphenyl groups and from 30 to 85 mole percent of the R groups are isopropylphenyl groups, said mixture consisting essentially of triphenylphosphate, mono-(isopropylphenyl)diphenylphosphates, bis(isopropylphenyl)phenylphosphates, and tris-(isopropylphenyl)-phosphates.

4,139,488

METHOD OF PREPARING SOLID RADIOACTIVE OR TOXIC WASTE FOR LONG-TERM STORAGE

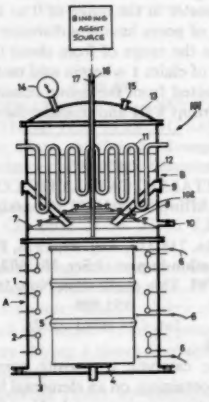
Karl Knotik, Eisenstadt; Peter Leichter, Vienna, and Heinz Jakusch, Ternitz, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Jun. 22, 1976, Ser. No. 698,750

Claims priority, application Austria, Jun. 26, 1975, 4942/75

Int. Cl.² G21F *9/34*

U.S. Cl. 252—301.1 W **10 Claims**



1. A process of preparing loose solid radioactive or toxic wastes for long-term storage, comprising placing the waste in a container, subjecting the container and its waste content to a partial vacuum, while the container and its waste content are under said partial vacuum introducing a flowable, hardenable binding agent into the container so as to thoroughly impregnate the waste, and thereafter hardening the binding agent.

4,139,489

METHOD FOR RECLAIMING A USED ACTIVE CARBON BY APPLYING ELECTRIC CURRENT DIRECTLY IN PARALLEL FLOW WITH CARBON FLOW

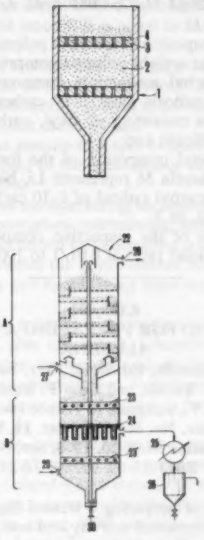
Toshio Mizuno, and Heiichiro Murakami, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushika Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 678,959, Apr. 21, 1976, abandoned. This application Jan. 12, 1977, Ser. No. 758,839

Claims priority, application Japan, Apr. 21, 1975, 50/48301

Int. Cl.² B01J *21/20*; C01B *31/08*; H05B *3/62, 31/12*

U.S. Cl. 252—411 R **6 Claims**



1. A method for reclaiming particulate used activated carbon which comprises:

(a) providing a vertical column containing at least two electrodes mounted in a vertically spaced relationship, said electrodes being provided with a plurality of openings large enough to allow passage of the used active carbon particles therethrough and having a total area at least 25% of the total surface area of said electrodes, said electrodes bridging the vertical walls of said column so that substantially all carbon entering from the top must pass through the electrodes;

(b) introducing the used activated carbon into the top of said column above the upper electrode and allowing the used activated carbon to flow downwardly through said electrodes filling the space between said electrodes thereby providing electrical contact between the particles and between the particles and the electrodes;

(c) applying a voltage potential between said electrodes thereby causing an electric current to flow through and thereby heat the particulate carbon between said electrodes; and

(d) removing said particulate carbon from the column at a point beneath the lower electrode.

4. The method of claim 1 wherein at least one of said elec-

trodes is in the form of a plate which carries a number of hollow legs on its lower surface, said legs being in communication with and extending from said openings and being large enough to allow passage of the used active carbon particles therethrough.

5. The method of claim 1 wherein said electrodes are rectangular or circular plates.

6. The method of claim 1 wherein at least one of said electrodes is in the shape of a grille composed of a core bar and a plurality of rods attached perpendicularly to both sides of said core bar.

4,139,490

DEHYDROCARBYL MAGNESIUM AND AN ALKALI METAL COMPOUND CATALYST COMPOSITION FOR POLYMERIZING CONJUGATED DIENES

Adel F. Halasa, Bath; James E. Hall, Akron, and Donald N. Schulz, Hartville, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 7, 1977, Ser. No. 848,958
Int. Cl.[2] B01J *31/12*; C08F *4/46, 4/48, 4/50*
U.S. Cl. 252—431 L 9 Claims

1. A catalyst composition capable of polymerizing butadiene to a high molecular weight polymer comprising

(a) a dihydrocarbyl magnesium compound in which the hydrocarbyl radicals have 1–10 carbon atoms selected from the class consisting of alkyl, carbocyclic aryl and cycloalkyl radicals; and

(b) an alkali metal compound of the formula $R(SM)_n$ or RC=CM, wherein M represents Li, Na, or K; R represents a hydrocarbyl radical of 1–10 carbon atoms; and n represents 1, 2, or 3;

the concentrations of the respective components giving an Mg/alkali metal molar ratio of 0.01/1 to 100/1.

4,139,491

NOVEL METHOD FOR PREPARING A HIGH PURITY ALUMINA

Tansukhlal G. Dorawala; Edwin R. Kerr, both of Wappingers Falls; Robert G. Kochis, and Leon F. Koniz, both of Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 665,834, Mar. 11, 1976, abandoned.
This application Mar. 20, 1978, Ser. No. 888,591
Int. Cl.[2] B01J *27/02, 31/02, 27/24, 21/00*
U.S. Cl. 252—440 26 Claims

1. The method of preparing a treated high-purity alumina characterized by improved activity and containing a catalytic amount of sulfate anion which comprises

adding to a charge high purity alumina containing less than 0.15 SO_4^{--}, 0.3–0.9 parts of a catalytic amount of a sulfate anion per 100 parts of Al_2O_3;

maintaining said charge alumina in contact with said catalytic amount of sulfate ion whereby said sulfate ion is distributed over the outside of said charge alumina and throughout substantially the entire body of said alumina thereby forming desired product treated alumina containing a catalytic amount of sulfate anion; and

recovering said desired product treated alumina containing a catalytic amount of sulfate anions.

4,139,492

HYDROTREATING CATALYSTS

Ronald J. Polard, Trumbull, and John D. Voorhies, New Canaan, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 10, 1977, Ser. No. 823,317
Int. Cl.[2] B01J *21/02, 35/00*
U.S. Cl. 252—433 13 Claims

1. A process of making catalyst for catalytic hydrotreating of petroleum fractions wherein a catalyst support of alumina or alumina with silica is impregnated with compounds of at least one Group VI B metal and of nickel, at least one of said compounds being impregnated on said support in an aqueous solution containing an amount of HBF_4 sufficient to increase the catalytic hydrotreating activity of the catalyst, after which the impregnated support is dried and calcined to finish the catalyst.

4,139,493

SILICA-PROMOTED HYDROFINING CATALYST AND PROCESS

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 3, 1977, Ser. No. 821,334
Int. Cl.[2] B01J *29/06, 29/00, 29/10*
U.S. Cl. 252—455 R 14 Claims

1. A method for the manufacture of a silica-promoted cobalt- and/or nickel-molybdenum-alumina hydrofining catalyst, which comprises:

(A) ion exchanging a silica-alumina hydrogel containing about 50–90 wt.% SiO_2 with an ammoniacal solution of a cobalt and/or nickel compound to incorporate therein by ion exchange at least about 2 wt.% of Co and/or Ni, and water-washing the exchanged hydrogel to remove extractable ions therefrom;

(B) homogeneously admixing the undried solid product from step (A) with a boehmite alumina hydrogel, the desired molybdenum component and sufficient water to provide an extrudable plastic mixture;

(C) extruding the plastic mixture to provide extrudates of desired size and shape; and

(D) drying and calcining the extrudates.

4. A catalyst composition comprising about 1–10 wt.% NiO and/or CoO, about 5–35 wt.% MoO_3, about 5–40 wt.% SiO_2, and the balance substantially Al_2O_3, said catalyst having been prepared by the method of claim 1.

4,139,494

CATALYST FOR HYDROFINING PETROLEUM WAX

Takuji Itoh, Sayama; Satoshi Sakurada, Omiya; Shohei Okano, Tokorozawa; Takashi Obayashi, Kawagoe; Takeo Toyoizumi, Ohi, and Osami Iwata, Kawagoe, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1977, Ser. No. 832,434
Claims priority, application Japan, Sep. 14, 1976, 51-110501
Int. Cl.[2] B01J *29/06, 29/00, 29/10*
U.S. Cl. 252—455 R 10 Claims

1. A catalyst comprising at least one metal hydrogenating component on a porous alumina/silica carrier containing from about 5 to 25 wt.% of silica and from 0.2 to 5 wt.% of an alkali metal component and being further characterized in that:

(a) the volume of pores having a diameter in the range of 60 to 150 A is greater than 80% of the volume of pores having a diameter in the range of 0 to 150 A; and

(b) the volume of pores having a diameter in the range of 0 to 600 A is in the range of from about 0.45 to 0.60 ml/g.

2. The catalyst of claim 1 wherein said metal hydrogenating component is selected from the group consisting of metals of Group VI and Group VIII and mixture thereof.

4,139,495

MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 718,310, Aug. 27, 1976, Pat. No. 4,079,097, which is a continuation-in-part of Ser. No. 602,935, Aug. 8, 1975, Pat. No. 3,981,795. This application Nov. 16, 1977, Ser. No. 851,908
Int. Cl.[2] B01J *23/16*
U.S. Cl. 252—464 20 Claims

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % bismuth, wherein the platinum group metal, catalytically available cobalt and

bismuth are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the bismuth is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,139,496

CATALYST FOR DEALKYLATING AN ALKYLAROMATIC HYDROCARBON

Tansukhlal G. Dorawala, Wappingers Falls; Russell R. Reinhard, Hopewell Junction, and Paul H. Lewis, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 626,941, Oct. 29, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 748,447

Int. Cl.[2] B01J *21/04, 23/78, 23/86*

U.S. Cl. 252—465 **3 Claims**

1. A catalyst characterized by its ability to catalyze dealkylation of an alkylaromatic hydrocarbon at steam dealkylation conditions, which comprises:

an alumina catalyst support bearing:

an oxide of chromium;

an oxide of nickel, said catalyst containing said nickel metal expressed as oxide, in amount of at least about 6 weight %, at least a portion of said nickel metal being in the form of free metal having a surface area of at least about 8 square meters per gram of total catalyst; and

an oxide of potassium, said catalyst having been activated by the process which comprises:

(a) maintaining the unactivated catalyst in a hydrogen atmosphere at 750° F.–1400° F. for 10–30 hours, thereby forming a hydrogen-treated catalyst;

(b) maintaining the hydrogen-treated catalyst in a steam-hydrogen atmosphere at 750° F.–1400° F. for 2–10 hours, thereby forming a steamed hydrogen-treated catalyst; and

(c) cooling the steamed hydrogen-treated catalyst to 650° F.–900° F. in a steam or steam-hydrogen atmosphere, thereby forming an activated catalyst.

4,139,497

DEHYDROGENATION CATALYST TABLET AND METHOD FOR MAKING SAME

William M. Castor, Clute, and Pete J. Menegos, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 4, 1977, Ser. No. 784,480

Int. Cl.[2] B01J *23/78, 23/86, 35/02*

U.S. Cl. 252—470 **13 Claims**

1. A method for making an improved fixed-bed, dehydrogenation catalyst tablet which comprises:

a. forming microspheres from a slurry of catalyst source constituents of the oxides of iron, potassium, and chromium by spray drying a slurry containing these catalyst source constituents;

b. forming a catalyst tablet by subjecting a preselected amount of the microspheres to a compressive pressure of at least 3,000 psi; and

c. calcining the tablet at a temperature of at least 500° C.

4,139,498

PROCESS OF MANUFACTURING HIGH-CONCENTRATION OLEFIN SULFONATE SOLUTION

Akira Kawakami, Sakura; Toshiaki Ogoshi, Funabashi; Yoshio Aoki, Tokyo, and Masao Honda, Ichikawa, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,164

Claims priority, application Japan, Dec. 26, 1975, 50-154809

Int. Cl.[2] C11D *1/14, 1/83, 3/37, 11/04*

U.S. Cl. 252—555 **6 Claims**

1. In a process of manufacturing an aqueous olefin sulfonate solution which comprises neutralizing and hydrolyzing the reaction product obtained by sulfonating α-olefin having from 10 to 20 carbon atoms, the improvement which comprises:

the neutralizing and hydrolyzing steps are performed in the presence of

(a) an alkaline material in an amount equal to the sum of amount A plus amount B, wherein amount A is the stoichiometric amount of said alkaline material for effecting neutralization and hydrolysis of said reaction product and amount B is equal to from 0.2 to 1.5 times the amount A;

(b) polyvinyl alcohol having a polymerization degree in the range of 500 to 2000, wherein the amount of said polyvinyl alcohol is from 0.2 to 2.0 times the amount (B) of said alkaline material, and

(c) water in an amount effective to make the water content of the product of the neutralizing and hydrolysis steps less than 50%.

4. In a process of manufacturing an aqueous olefin sulfonate solution which comprises neutralizing and hydrolyzing the reaction product obtained by sulfonating α-olefin having from 10 to 20 carbon atoms, the improvement which comprises:

the neutralizing and hydrolyzing steps are performed in the presence of

(a) an alkaline material in an amount equal to the sum of amount A plus amount B, wherein amount A is the stoichiometric amount of said alkaline material for effecting neutralization and hydrolysis of said reaction product and amount B is equal to from 0.2 to 1.5 times the amount A;

(b) a substance selected from the group consisting of polyethylene glycol having a mean molecular weight in the range of about 400 to about 2000 and polypropylene glycol having a mean molecular weight in the range of about 200 to about 6000, wherein the amount of said substance is from 0.2 to 2.0 times the amount (B) of said alkaline material, and

(c) water in an amount effective to make the water content of the product of the neutralizing and hydrolysis steps less than 50%.

4,139,499

THERMALLY REVERSIBLE AMPHOTERIC ION EXCHANGE RESINS OF IMPROVED DEMINERALIZATION CAPACITY

Keith O. Wade, Essendon, Australia, and Jerry H. Brown, Menlo Park, Calif., assignors to ICI Australia Limited, Melbourne, Australia and Diamond Shamrock Corporation, Del.

Filed Jun. 18, 1976, Ser. No. 697,741

Claims priority, application Australia, Jul. 1, 1975, PC2189; May 28, 1976, PC6093

Int. Cl.[2] B01J *1/08;* **C02B** *1/14, 1/40*

U.S. Cl. 521—32 **10 Claims**

1. A process of making a thermally reversible amphoteric ion exchange resin having a salt uptake of at least 0.169 meq/ml from 1000 ppm NaCl which process comprises:

A. dispersing in a suitable suspension medium a mixture of weakly basic ion exchange resin particles of particle size about 0.1 to 5 microns chosen from the group consisting of highly crosslinked polymers of allylamine, diallylamine, triallylamine, N-lower alkyl or N-benzyl-N,N-diallyla-

mine, 1,4-bis (N,N-diallylaminomethyl) benzene, 2,4,6-tris (N,N-diallylaminomethyl) toluene, 1,2,4-tris (N,N-diallylaminomethyl) benzene, 1,6-bis (N,N-diallylamino)hexane, N,N-di-lower alkyl-N-(vinylbenzyl) amine, and mixtures thereof and crosslinked polymers derived from N-lower alkyl ethyleneimines and the N,N-di-lower alkylaminoethyl and N,N-di-lower aklyl aminomethyl esters of acrylic and methacrylic acid; one or more monomers containing an acidic ionogenic group, or organic precursor thereof; a crosslinking agent comprising two or more vinylic or allylic groups; and a porogen which is an inert solvent in which the monomer is soluble but in which the polymer is essentially insoluble and which is not soluble in the suspension medium;

B. polymerizing the monomers to give beads of particle size about 250 to 1000 microns comprising particles of the weakly basic ion exchange resin embedded in a macroporous crosslinked polymer matrix; and

C. treating the polymeric composition from B to convert any organic precursors to ionogenic groups to form an amphoteric polymeric composition wherein the molar ratio of basic ionogenic groups to acidic ionogenic groups is in the range from 10:90 to 90:10.

4,139,500

PRINTING INK BINDING AGENTS

Albert Rudolphy, Wiesbaden-Biebrich, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 428,855, Dec. 27, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,489

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1974, 2406555

Int. Cl.[2] C08L *93/00, 93/04, 61/10, 45/00*

U.S. Cl. 260—19 UA **11 Claims**

1. A process for the preparation of a printing ink binder which comprises simultaneously reacting (1) at least one hydrocarbon resin containing a predominant number of units of cyclopentadiene or derivatives thereof and having a bromine number in the range 50 to 200, (2) at least one phenol-aldehyde component selected from the group consisting of a phenol-aldehyde condensation product and precursors therefor, the phenol content of which component consists predominantly of at least one phenol substituted by a hydrocarbon group, and (3) a natural resin component selected from the group consisting of a natural resinic acid an ester and a metal salt thereof, said reaction mixture being free from α,β-olefinically unsaturated dicarboxylic acids or derivatives thereof.

4,139,501

PRODUCTION OF POLYURETHANE FOAM OF REDUCED TENDENCY TO FORM EMBERS WHEN BURNED

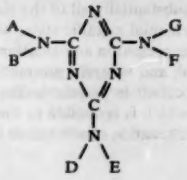
Bernard Rudner, Ridgewood; Thomas M. Noone, Little Ferry, both of N.J., and Peter D. Pauly, Mountaintop, Pa., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 589,522, Jun. 23, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 843,601

Int. Cl.[2] C08G *18/32*

U.S. Cl. 521—136 **16 Claims**

1. In a process for the manufacture of a flexible, resilient, polyurethane foam by the reaction of a polyol and an organic polyisocyanate in the presence of a blowing agent, the amount of said organic polyisocyanate being at least one equivalent per equivalent of the total of said polyol and said blowing agent, the step of incorporating into the mixture to be foamed at least one compund of the formula



in amount sufficient to reduce the formation of incendiary embers when the foam is burned, in the preceding formula A, B, D, E, F and G being selected from the group consisting of hydrogen, methylol and $ROCH_2$ —wherein R is an alkyl radical containing from one to four carbon atoms, with the proviso that in said formula at least one of A, B, D, E, F and G is methylol or $ROCH_2$ —, and wherein the amount of said compound is from one to about 20 percent by weight based upon the weight of said polyol.

4,139,502

NICKEL SELECTIVE DIOXIME-CONTAINING POLYURETHANE FOAMS

Martin M. Halmann, Rehovot, Israel, and Dai-Woon Lee, Seoul, Rep. of Korea, assignors to Yeda Research and Development Company, Ltd., Rehovot, Israel

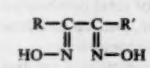
Filed Oct. 25, 1977, Ser. No. 845,236

Claims priority, application Israel, Oct. 26, 1976, 50769

Int. Cl.[2] B01D *15/08*

U.S. Cl. 423—139 **11 Claims**

1. An extraction agent for the selective extraction of ions of nickel from aqueous solutions containing same, comprising a dioxime of the formula



wherein R and R′ each designates alkyl, aryl, aralkyl, alkaryl or a heterocyclic group, optionally substituted by a non-interfering substituent, which dioxime is supported in the matrix of an open-bore polyurethane foam.

4,139,503

PROCESS FOR THE PRODUCTION OF HIGH RESILIENCE POLYURETHANE FOAMS AND FOAMS PRODUCED THEREFROM

Hans-Joachim Kollmeier, Essen, and Gerd Rossmy, Haltern, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Aug. 17, 1977, Ser. No. 825,420

Claims priority, application United Kingdom, Aug. 23, 1976, 35075/76

Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—112 **9 Claims**

1. In a process for the production of high-resilience open-celled polyurethane foams in one step wherein a foaming charge containing polyether polyols composed essentially of alkylene oxides, polyisocyanates, water, catalysts, emulsifiers or stabilizers, cross-linking agents and conventional additives, is formed, the improvement which comprises adding the follow ig ingredients to the foaming charge:

(A) 0.01 to 2.0 g/100 g polyol of a siloxane component selected from the group consisting of:

(A-1) straight-chained or branched, fractional organopolysiloxane composed of a mixture of polysiloxanes with 7 to 20 Si-atoms, where the Si-valences which are not linked through oxygen with silicon, are saturated with lower alkyl radicals or aryl radicals, where the terminal Si-atoms can have a lower alkyoxy group attached thereto;

(A-2) known polyoxyalkylene-polysiloxane-block copolymers, whose siloxane block corresponds to the definition under A-1, but wherein the alkoxy radicals have been replaced by polyether blocks with an average molecular weight of less than 1500;

(A-3) known straight-chained or branched organopolysiloxanes, wherein the siloxane block or blocks are substantially in statistical equilibrium, each block having on the average, 5 to 15 Si-atoms and containing at least one substituted alkyl group or an alkylaryl group per siloxane block; and

(A-4) known polyoxyalkylene-polysiloxane-block copolymers, wherein the siloxane block or -blocks are substantially in statistical equilibrium and each block has on the average, 5 to 15 Si-atoms and contains attached thereto 2 to 6 polyoxyalkylene blocks with an average molecular weight of less than 1500; and

(B) 0.01 to 0.2 g-hydroxy equivalent weight /100 g polyol of a cross-linking agent having at least 4 hydroxyl groups per molecule and a hydroxy equivalent weight of 30 to 180 and wherein toluylene di-isocyanate is the polyisocyanate.

4,139,504

NOVEL NONAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID NONAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 65115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,134

Int. Cl.[2] C08L *37/00;* **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—8 **20 Claims**

1. The nonapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino or lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,139,505

ENLARGED GRANULE STARCH STILT MATERIAL FOR MICROENCAPSULATED COATINGS

Saul Rogols, Circleville, and John W. Salter, Westerville, both of Ohio, assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Continuation of Ser. No. 712,982, Aug. 9, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,545

Int. Cl.[2] C08L *1/00*

U.S. Cl. 260—9 **28 Claims**

20. The method of making granular starch material consisting essentially of intact, enlarged starch granules, the steps comprising:

(a) forming a slurry of a granular starch;

(b) adding acid to lower the pH of the slurry to less than about 5:

(c) adding dilute alkali until the pH reaches about 11–12;

(d) allowing the alkali to swell the starch granules in the slurry while maintaining the temperature in the range of 90–95° F. and pH of the slurry above 11;

(e) thereafter adding a polyfunctional crosslinking agent selected from the group consisting of epichlorohydrin, urea-formaldehyde, sodium trimetaphosphate and phosphorus oxychloride to said alkaline slurry in an amount sufficient to increase the pasting temperature of the enlarged starch granules above the original pasting temperature of the granular starch; and

(f) drying said swollen starch granules to obtain an enlarged granule starch material in which the average particle size of the granules is about 7–50% larger than the original granular starch.

4,139,506

COMPOSITION SUITABLE FOR USE AS AN ADHESIVE LAYER ON A SHAPED STRUCTURE OF A POLYESTER

Klaus Thoese, Naurod, and Karl-Heinz Jung, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1976, Ser. No. 748,765

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1975, 2555783

Int. Cl.[2] C08L *1/10, 1/14*

U.S. Cl. 260—16 **8 Claims**

1. A composition, suitable for use as an adhesive layer on a shaped structure of a polyester, which comprises a blend of a copolyester formed from a polyhydric alcohol and a dicarboxylic acid, and a polyisocyanate, and, in addition, containing an organic polymer compound compatible with the blend of the copolyester and the polyisocyanate, and being selected from the group of cellulose esters, vinylidene chloride copolymers, copolymers of methylvinyl ether and maleic acid anhydride and acrylic/methacrylic acid esters, the ratio by weight of copolyester to the polymer compound being within the range of from about 20:1 to 0.5:1.

4,139,507

ONE-COMPONENT BINDER FOR FIBERBOARD

Richard D. Sundie, Montvale; William R. Michael, West Orange, and Harry E. Ulmer, Morristown, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 12, 1978, Ser. No. 868,958

Int. Cl.[2] C08L *61/20*

U.S. Cl. 260—29.4 R **6 Claims**

1. A curable amino resin binder system comprised of urea, formaldehyde, water, a stabilizing amount of an oxime compound which is soluble in the binder system, wherein the binder system has a pH from about 6.5 to 7.5

4,139,508

PRODUCTS OBTAINED BY MOLDING LIGNEOUS MATERIALS AND THEIR METHOD OF MANUFACTURE

Pierre Sorbier, Place de la Mairie, 84210-Pernes les Fontaines, France

Filed Oct. 7, 1976, Ser. No. 730,172

Claims priority, application France, Oct. 8, 1975, 75 30849; Sep. 27, 1976, 76 28984

Int. Cl.[2] C08L *97/00*

U.S. Cl. 260—17.5 **13 Claims**

1. A process for producing a heat-resistant object comprising

(a) immersing a ligneous material in an aqueous salt solution,

(b) drying the said ligneous material, in the form of fibrils until the moisture content thereof is about 10 percent,

(c) impregnating said fibrils with a solution of a polymerizable resin, and

(d) molding said resin impregnated fibrils under pressure to polymerize said resin thereby producing said heat-resistant object.

4,139,509

HOUSEHOLD STARCH COMPOSITION PREPARED BY EMULSION-POLYMERIZING A VINYL MONOMER IN AN AQUEOUS SOLUTION OF A POLYVINYL ALCOHOL AND A NONIONIC STARCH OR CELLULOSE

Kinjiro Matsunaga, Funabashi; Shinichi Masuda, Ichikawa; Yunosuke Nakagawa, Koshigaya, and Kyozaburo Tachibana, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

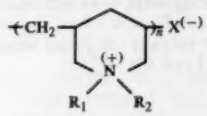
Filed Nov. 11, 1977, Ser. No. 850,693

Claims priority, application Japan, Nov. 29, 1976, 51-143178; Jan. 24, 1977, 52-6609

Int. Cl.[2] C08L *3/08*

U.S. Cl. 260—17 R **23 Claims**

1. A household starch composition comprising an emulsion prepared by emulsion polymerizing (a) a vinyl monomer which is not capable of reacting with an alkali to form a salt, in an aqueous solution of (b) polyvinyl alcohol, nonionic modified starch selected from the group consisting of hydroxyethylated starch and hydroxypropylated starch, or nonionic cellulose derivative selected from the group consisting of hydroxyalkylated cellulose and alkyl cellulose, in the presence of (c) a cationic vinyl polymer or a ring-closed polymer of cationic diallyl compound having the formula



wherein R_1 and R_2, which can be the same or different, are alkyl or substituted alkyl having 1 or 2 carbon atoms in the alkyl moiety, and X is an anion, and in the presence of (d) a cationic surface active agent, a cationic monomer or mixture of said cationic surface active agent and said cationic monomer.

4,139,510

PROCESS FOR PREPARING CATHODICALLY DEPOSITABLE COATING COMPOSITIONS

Terry L. Anderson, Louisville, Ky., assignor to Celanese Polymer Specialties Company, Louisville, Ky.

Division of Ser. No. 715,267, Aug. 18, 1976, Pat. No. 4,093,594. This application Feb. 24, 1978, Ser. No. 881,091

Int. Cl.[2] C08G *69/00*

U.S. Cl. 260—18 N **10 Claims**

1. A process for preparing a resinous composition which comprises

(A) adducting

a) a polyepoxide resin derived from a dihydric phenol and an epihalohydrin, said polyepoxide resin having a 1,2-epoxide equivalent weight of about 400 to about 4000, with

b) a polyamine having at least 2 amine nitrogen atoms per molecule, at least 3 amine hydrogen atom per molecule and no other groups reactive with epoxide groups; and

wherein at least 1.5 mols of (b) are present for each epoxide equivalent of (a) and wherein the reaction is continued until all of the epoxide groups have reacted with amine groups;

(B) removing by distillation the unreacted polyalkylene polyamine; and

(C) reacting at a temperature of about 300° F. to aout 500° F. the so formed adduct with a monocarboxylic acid which contains one carboxylic acid group and no other groups reactive with amine groups, said monocarboxylic acid having about 8 to 24 carbon atoms per molecule

wherein about 2 to about 6 mols of (C) are reacted per each mol of (A) and wherein said resinous composition has a weight per active nitrogen of about 200 to about 600.

4,139,511

ASPHALT COMPOSITIONS

Shigeyuki Hayashi, Kawasaki; Masao Isobe, Kamakura, and Tadakazu Yamashita, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1977, Ser. No. 851,133

Claims priority, application Japan, Nov. 19, 1976, 51/138405

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—28.5 AS **6 Claims**

1. As asphalt composition comprising (A) 100 parts by weight of an epoxy resin and (B) 10–2,000 parts by weight of a maleinated asphaltic material obtained by reacting an asphaltic material with maleic anhydride in the ratio by weight of 100:0.2 to 100 at a temperature of 100° to 300° C. and a pressure of atmospheric to 30 kg/cm^2.

4,139,512

COPOLYESTERS OF TRIAZINEDICARBOXYLIC ACIDS

Lothar Buxbaum, Lindenfels, Odenwald, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 27, 1977, Ser. No. 836,940

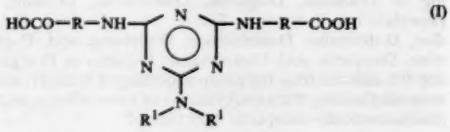
Claims priority, application Switzerland, Oct. 7, 1976, 12699/76

Int. Cl.[2] C08G *63/68*

U.S. Cl. 260—22 D **21 Claims**

1. A linear thermoplastic copolyester which has a relative viscosity of at least 1.30, measured on a solution of 1 gram of polyester in 100 ml of a solvent consisting of equal parts of phenol and symmetrical tetrachloroethane at 30° C., which comprises the condensation product in about a 1:1 molar ratio of diacids (a), (b) and (d) with diols (c) so that the composition of the polyester comprises in the diacid component of the polyester

(a) from 49.5 to 30 mol %, based on the total polyester, of radicals of a dicarboxylic acid of the formula I



(I)

in which R is alkylene having 1 to 3 carbon atoms, cyclohexylene or phenylene, and R^1 is methyl, ethyl, cyclohexyl or phenyl;

(b) from 0 to 20 mol %, based on the total polyester, of radicals of at least one aromatic dicarboxylic acid; and

(d) from 0.5 to 5 mol %, based on the total polyester, of radicals of one or more linear or branched aliphatic dicarboxylic acid having at least 6 carbon atoms; and

in the diol component of the polyester

(c) 50 mol %, based on the total polyester, of radicals of at least one aliphatic diol, cycloaliphatic diol or mixture thereof,

wherein the radicals (a), (b) and (d) are attached to radicals (c) through ester linkages in a random distribution.

4,139,513

COPOLYMER FOR SOFT CONTACT LENS, ITS PREPARATION AND SOFT CONTACT LENS MADE THEREOF

Kyoichi Tanaka; Kouzou Takahashi, both of Nagoya; Mitsuhiro Kanada, Aichi; Shinji Kanome, and Tatsutoshi Nakajima, both of Nagoya, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Nagoya, Japan

Filed Mar. 20, 1978, Ser. No. 888,323

Claims priority, application Japan, Nov. 8, 1977, 52-134248

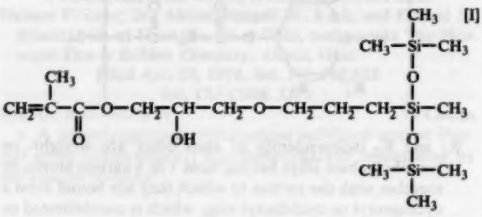
Int. Cl.[2] C08F *220/28, 230/08;* G02C *7/04*

U.S. Cl. 260—29.6 TA **12 Claims**

1. A polymerization product of

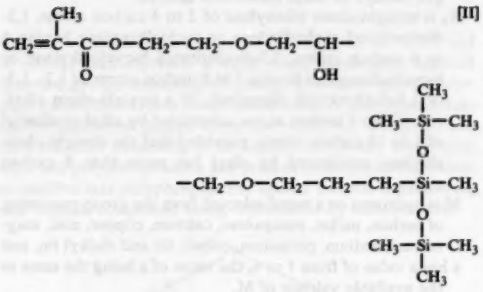
(a) 15 to 50% of at least one monomer selected from the

group consisting of methyldi(trimethylsiloxy)sylylpropylglycerol methacrylate having the following formula



[I]

and methyldi(trimethylsiloxy)sylylpropylglycerolethyl methacrylate having the following formula



[II]

(b) 50 to 85% of at least one hydrophilic monomer selected from the group consisting of ethylene glycol monomethacrylate, diethylene glycol monomethacrylate, triethylene glycol monomethacrylate, N-vinyl pyrrolidone and dimethyl acrylamide, and

(c) 0.3 to 2.0% of at least one cross-linking agent having at least two copolymerizable functional groups selected from the group consisting of ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, allyl methacrylate, divinyl benzene, diallyl phthalate and trimethylolpropane trimethacrylate, said % of (a), (b) and (c) being % by weight based on the total weight of (a), (b) and (c).

4,139,514

AQUEOUS VEHICLES

David R. Bassett, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,037

Int. Cl.[2] C08L *31/00*

U.S. Cl. 260—29.6 H **23 Claims**

1. An aqueous, translucent to clear, water-borne vehicle comprising an aqueous solution consisting essentially of water and from 20 to 40 weight percent of an emulsion polymerized polymer of a monomers mixture, based on weight, of:

(a) from about 5 to 30 weight percent of acrylic acid, methacrylic acid or mixtures thereof;

(b) from about 30 to about 90 weight percent of an ester of the formula:

$CH_2=CXCOOR$

wherein X is hydrogen or methyl and R is an unsubstituted or substituted (i) alkyl group of from 1 to about 6 carbon atoms, (ii) phenyl group, (iii) naphthyl group of (iv) a cycloalkyl group having from 5 to 10 ring carbon atoms;

(c) from 0 to about 40 weight percent of polymerizable ethylenically unsaturated monomers of the group acrylonitrile, methacrylonitrile, acrylamide or methacrylamide and the N-substituted derivatives thereof and substituted and unsubstituted styrenes; and

(d) from 0 to about 5 weight percent of a chain transfer agent;

said polymer solubilized with a base of the group ammonia, organic amines and alkali metal hydroxides and further said vehicle has a pH of from about 8 to about 10.

4,139,515

ANTI-FOULING PAINT CONTAINING A COPOLYMER OF A TRIORGANOTIN SALT OF AN UNSATURATED CARBOXYLIC ACID

Simon P. J. Dennington, Whitley Bay, England, assignor to The International Paint Co. Ltd., London, England

Filed Nov. 7, 1977, Ser. No. 849,098

Claims priority, application United Kingdom, Nov. 16, 1976, 47679/76

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.6 MM **13 Claims**

1. An anti-fouling paint for ships' hulls comprising (a) an aqueous emulsion of a film-forming emulsion copolymer containing from more than 50 up to 80 percent by weight of units of at least one triorganotin salt of an olefinically unsaturated carboxylic acid, the balance of the copolymer being units of at least one olefinically unsaturated comonomer, the glass transition temperature of the copolymer being less than 30° C. and the inherent viscosity of the copolymer being from 0.5 to 1.5, and (b) a substantially water-insoluble metalliferous pigment capable of reacting with seawater to form a water-soluble metal compound.

4,139,516

PROCESS FOR THE PREPARATION OF THIANTHRENE COMPOUNDS

Henry C. Lin, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,181

Int. Cl.[2] C07D *339/08*

U.S. Cl. 260—327 P **6 Claims**

1. A process for the preparation of a thianthrene compound which comprises the sequential steps of

A. adding sulfur monochloride to an excess of a benzene compound in the presence of aluminum chloride in a molar ratio of benzene compound to sulfur monochloride of about 5:1 to about 12:1 and a molar ratio of aluminum chloride:sulfur monochloride about 0.1:1 to about 1.6:1 and reacting at a temperature of between about 20° Celsius and the boiling point of the reaction mixture to form a thianthrene compound:aluminum chloride complex in the reaction medium;

B. treating the reaction medium with an aliphatic alcohol of one to ten carbon atoms in a weight ratio of alcohol:excess benzene compound of about 0.5:1 to about 8.0:1 to free the thianthrene compound from the complex and dissolve the aluminum chloride therein;

C. separating the thianthrene compound as a solid from the reaction medium.

4,139,517

TRANSPARENT PIGMENTED POLYCARBONATE CONTAINER

Frederick J. Zaganiacz, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 25, 1977, Ser. No. 854,874

Int. Cl.[2] C08K *3/22*

U.S. Cl. 260—37 PC **6 Claims**

1. A transparent, pigmented, polycarbonate container formed from a polycarbonate having intimately incorporated therein an effective amount of pigment to selectively filter out the portion of the visible spectrum from about 380 to 550 nm.

4,139,518

POLYETHYLENE TEREPHTHALATE COMPOSITION AND SHAPED ARTICLES

Siegfried Janocha, Wiesbaden-Biebrich; Manfred Unger, Schlangenbad, and Klaus Hoheisel, Wiesbaden-Biebrich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 22, 1977, Ser. No. 818,018

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1976, 2633358

Int. Cl.[2] C08K *3/36, 5/09*

U.S. Cl. 260—40 R 21 Claims

1. A polyester composition characterized by enhanced melt filterability properties and being adapted for producing biaxially oriented film products having improved depth of roughness values and low values for short wave length irregularities in film thickness, said composition consisting essentially of a polyethylene terephthalate polymer, calcium in the form of a salt which is capable of catalyzing the transesterification reaction between dimethyl terephthalate and ethylene glycol, and an amount sufficient to enhance the melt filterability of the composition of silica obtained by a pyrogenic process.

4,139,519

CURABLE COMPOSITIONS BASED ON SILICON-CONTAINING BUTADIENE POLYMERS

Kunio Itoh; Kiyoshi Imai; Masaki Tanaka, and Kimitaka Kumagae, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1977, Ser. No. 825,419

Claims priority, application Japan, Aug. 19, 1976, 51-98892

Int. Cl.[2] C08L *83/06, 83/00;* C08K *3/00*

U.S. Cl. 260—42.26 19 Claims

1. A curable composition comprising:

(a) 100 parts by weight of a silicon-containing butadiene polymer having at least one organosilicon group bonded through the carbon-to-silicon linkage to the main chain in a molecule of a polybutadiene or a copolymer mainly composed of butadiene, said organosilicon group being represented by the general formula R_3Si— where R is a monovalent hydrocarbon group or an organosiloxy group,

(b) from 1 to 200 parts by weight of an ethylenically unsaturated polymerizable monomer compound,

(c) from 0 to 900 parts by weight of a filler, and

(d) from 0.03 to 30 parts by weight of an organic peroxide.

4,139,520

COMPOSITIONS STABILIZED WITH HINDERED PIPERIDINE CARBOXYLIC ACIDS OR METAL SALTS THEREOF

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 592,006, Jun. 30, 1975, Pat. No. 4,031,095. This application May 26, 1977, Ser. No. 800,978

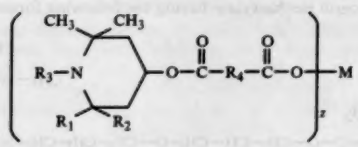
The portion of the term of this patent subsequent to Jun. 1, 1993, has been disclaimed.

Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 N 23 Claims

1. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration containing from

(a) 0.005% to 5% of a stabilizing compound of the formula



R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms propargyl, benzyl, or alkyl substituted benzyl,

R_4 is straight-chain alkenylene of 2 to 4 carbon atoms, 1,2-disubstituted cycloalkylene or cycloalkenylene having 4 to 6 carbon atoms, 2,3-disubstituted bicycloalkylene or bicycloalkenylene having 7 to 8 carbon atoms or 1,2-, 1,3- or 1,4-disubstituted phenylene, or a straight-chain alkylene of 1 to 4 carbon atoms substituted by alkyl or alkenyl of 1 to 18 carbon atoms, provided that the straight-chain alkylene substituted by alkyl has more than 8 carbon atoms,

M is hydrogen or a metal selected from the group consisting of barium, nickel, manganese, calcium, copper, zinc, magnesium, sodium, potassium, cobalt, tin and dialkyl tin, and

z has a value of from 1 to 4, the value of z being the same as the available valence of M,

(b) 0 to 5% of a phenolic antioxidant,

(c) 0 to 5% of a thio co-stabilizer, and

(d) 0 to 5% of a U.V. absorber.

4,139,521

PRODUCTION OF THERMALLY STABILIZED POLYESTER

Stanley D. Lazarus, Petersburg, and Kalidas Chakravarti, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 806,988, Jun. 16, 1977, abandoned. This application Apr. 13, 1978, Ser. No. 895,900

Int. Cl.[2] C08K *5/34;* C08G *63/70, 63/76*

U.S. Cl. 260—45.8 A 17 Claims

1. A thermally stabilized high molecular weight linear terephthalate condensation polyester having incorporated therein a thermally stabilizing amount of a stabilizer consisting of an N-epoxyalkyl imide of a dicarboxylic acid having 5 to 20 carbon atoms in the imide molecule and composed of carbon, hydrogen, carbonyl and epoxy oxygen, and imide nitrogen atoms, said epoxy oxygen being linked to adjacent carbon atoms, said thermally stabilized polyester having a free carboxyl concentration of less than 15 gram equivalents of carboxyl groups per 10^6 grams of polyester.

4,139,522

STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS

Peter R. Lantos, Media, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Mar. 13, 1978, Ser. No. 885,720

Int. Cl.[2] C08K *5/52*

U.S. Cl. 260—45.75 R 4 Claims

1. A stabilized ethylene-carbon monoxide copolymer composition containing about 0.01 to 10% based on the weight of polymer in the base composition of a manganous salt of an oxy phosphorus acid.

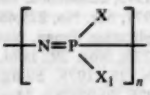
4,139,523

STABILIZATION OF POLYPHOSPHAZENE VULCANIZATES WITH A METAL COMPLEX

Delmar F. Lohr, Jr., Akron; Russell W. Koch, and Donald N. Schulz, both of Hartville, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 28, 1978, Ser. No. 900,833
Int. Cl.[2] C08K 5/29
U.S. Cl. 260—45.75 W 14 Claims

1. A polyphosphazene composition stabilized against thermal aging comprising (1) a polyphosphazene represented by the general formula:



wherein n represents an integer from 20 up to about 50,000 and X and X_1 each represent a monovalent substitutent selected from the groups consisting of alkoxy, substituted alkoxy, aryloxy, substituted aryloxy and amino, and X and X_1 are randomly distributed groups along the —P=N— backbone and (2) a stabilizer consisting of an organic compound compatible with said polyphosphazene and present in an amount sufficient to stabilize said polyphosphazene against thermal degradation, said organic compound being represented by the structure:

wherein W is —CRR'-CRR'— or

and wherein R and R' are selected from the group consisting of hydrogen, alkyl, cycloalkyl, acyl or mixtures thereof, and M is zinc or magnesium.

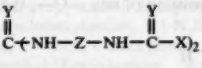
4,139,524

BIS UREIDE OF A POLYOXYALKYLENE POLYAMINE AS AN EPOXY ADDITIVE

Harold G. Waddill, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,816
Int. Cl.[2] C08G 59/56
U.S. Cl. 528—109 13 Claims

1. An additive for increasing the adhesive strength of a curable epoxy resin composition comprising a vicinal polyepoxide and a polyamine curing agent, which additive consists essentially of a bis ureide of a polyoxylakylene polyamine having the formula:



wherein X is hydrogen or a primary amino group; Y is oxygen or sulfur; and Z is a polyoxyalkylene group having a sufficient molecular weight such that said additive has an average molecular weight of at least 4,000.

4,139,525

FLEXIBLE GLYCOLIC ACID TERPOLYMERS

Robert Backskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 22, 1977, Ser. No. 826,491
Int. Cl.[2] C08G 63/60; 260 76;75 R;77;340.6;78.3 R
U.S. Cl. 528—302 11 Claims

1. A polymer useful as a hot-melt adhesive produced by heating a mixture of glycolic acid, its homopolymers, its low-molecular-weight esters, or mixtures thereof, with a dihydroxyalkane and a dibasic acid, the dibasic acid being present in an amount from about 1% to about 40% by weight of the polymer, and the dihydroxyalkane being present in an amount from about equimolar with, up to a 10-mol percent excess over, the dibasic acid, said heating being carried out at a temperature from about 120° C. to about 270° C. for a period of time sufficient to produce a polymer having a molecular weight between about 2,000 and 70,000.

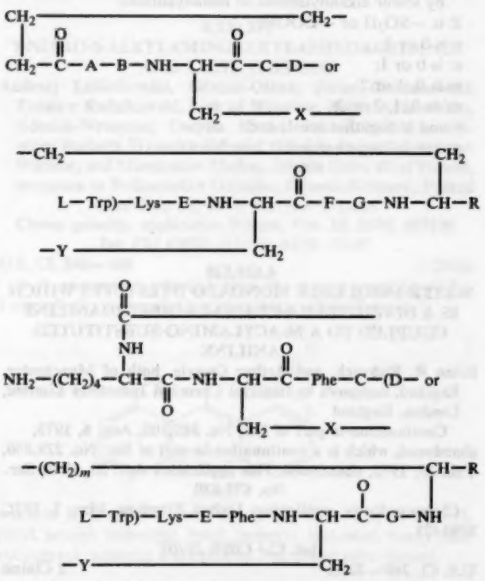
4,139,526

SOMATOSTATIN ANALOGS

Daniel F. Veber, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 1, 1977, Ser. No. 856,364
Int. Cl.[2] C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 S 13 Claims

1. The compounds having the formula:



wherein,
R is H or COOH,
m is 0 to 9,
A is $(Lys)_p$,
B is $(Asn)_p$, Abu, Pro or Ala,
C is Phe or Tyr,
E is Thr or Val,
F is $(Thr)_q$ or Val, G is $(Ser)_r$, Pro, Ala or Gly, and
X and Y are independently CH_2—S or S
wherein n, p, q and r are 0 or 1 and pharmaceutically acceptable non-toxic acid addition salts thereof.

4,139,527

FIBER REACTIVE MONOAZO DYESTUFFS CONTAINING A $-SO_2-CH_2-CH_2-O-PO_3H_2$ GROUP

Fritz Meininger, Frankfurt am Main; Klaus Hunger, Kelkheim, and Hartmut Springer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

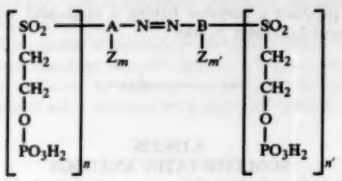
Continuation-in-part of Ser. No. 852,468, Aug. 22, 1969, abandoned. This application Aug. 21, 1973, Ser. No. 389,660

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1968, 1793301

Int. Cl.[2] C09B *62/74, 62/46*

U.S. Cl. 260—199 **9 Claims**

1. A water-soluble monoazo dyestuff having, in the form of the free acid, the formula



wherein:

A is phenyl, naphthyl or phenyl substituted by lower alkyl, lower alkyl sulfonyl, lower alkoxy, trifluoromethyl, cyano, chlorine, bromine, sulfonamide or carbamoyl;

B is hydroxynaphthylene or hydroxynaphthalene substituted by lower alkanoylamino or benzoylamino;

Z is $-SO_3H$ or $-COOH$;

n is 0 or 1;

n′ is 0 or 1;

m is 0, 1 or 2;

m′ is 0, 1, 2 or 3;

n and n′ together are 1; and

m and m′ together are 1, 2 or 3.

4,139,528

WATER-INSOLUBLE MONOAZO DYESTUFFS WHICH IS A DIAZOTIZED 6-CYANO-2:4-DINITROANILINE COUPLED TO A M-ACYLAMINO-SUBSTITUTED ANILINE

Brian R. Fishwick, and Arthur Quayle, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

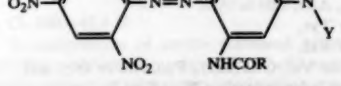
Continuation-in-part of Ser. No. 385,705, Aug. 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 229,550, Feb. 25, 1972, abandoned. This application Apr. 20, 1976, Ser. No. 678,630

Claims priority, application United Kingdom, Mar. 2, 1971, 5794/71

Int. Cl.[2] C09B *29/08*

U.S. Cl. 260—207.1 **2 Claims**

1. A water-insoluble monoazo dyestuff of the formula:



wherein R is selected from lower alkyl, chloro lower alkyl, tolyl and phenyl, and Y is lower alkyl.

4,139,529

N^2-NAPHTHALENESULFONYL-L-ARGININE DERIVATIVES AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Hyogi Kikumoto, Tokyo; Yoshikuni Tamao, Yokohama; Kazdo Ohkubo, Tokyo; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Shosuke Okamoto, Hyogo, both of, Japan

Division of Ser. No. 760,586, Jan. 19, 1977, Pat. No. 4,066,759, which is a continuation-in-part of Ser. No. 671,436, Mar. 29, 1976, Pat. No. 4,066,758, which is a continuation-in-part of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,483

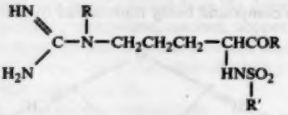
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029857; Mar. 11, 1975, 50-029358

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.[2] C07D *243/00*

U.S. Cl. 260—239 BC **2 Claims**

1. An N^2-naphathalenesulfonyl-L-arginine amide having the formula:

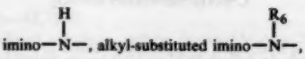


or the acid addition salt thereof with a pharmaceutically acceptable acid, wherein R is

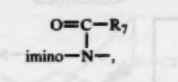
wherein Z is a divalent group containing up to 20 carbon atoms, which consists of more than one group selected from the class consisting of methylene $-CH_2-$, mono-substituted methylene

wherein R_3 is selected from the class consisting of alkyl, acyl, alkoxy and alkoxycarbonyl, respectively containing not more than 10 carbon atoms, and carbamoyl; and disubstituted methylene

wherein R_4 and R_5 are alkyl groups of not more than 10 carbon atoms, which further contains at least one member selected from the class consisting of oxy —O—, thio-S-,



wherein R_6 is an alkyl group of not more than 10 carbon atoms, acyl-substituted



wherein R_7 is an alkyl group of not more than 10 carbon atoms; and R' is a member selected from the class consisting of 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 1-naphthyl, 2-naphthyl, 1-naphthyl substituted with one member selected from the class consisting of alkoxy and alkoxy-carbonyloxy, respectively containing not more than 10 carbon atoms; and 2-naphthyl substituted with a member selected from the class consisting of alkoxy and alkoxy-carbonyloxy; respectively containing no more than 10 carbon atoms.

4,139,530

BENZO-[C]-CINNOLINIUM DYESTUFFS

Walter Kalk, and Karl H. Schündehütte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

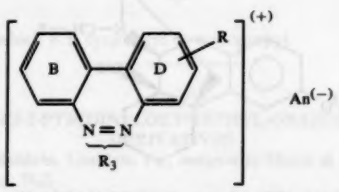
Continuation-in-part of Ser. No. 173,688, Aug. 20, 1971, abandoned. This application Jan. 10, 1977, Ser. No. 758,183

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1970, 2041689; Dec. 9, 1970, 2060598

Int. Cl.[2] **C07D** *237/36, 401/02, 413/02*

U.S. Cl. 544—234 **16 Claims**

2. Cationic dyestuff of the formula



wherein B is unsubstituted or substituted by 8-anilino, 9-anilino, 8-methoxy, 9-methoxy, 8-methyl, 9-methyl, 8-cyano, 9-cyano, 8-chloro, 9-chloro, 8-bromo, 9-bromo, 8,9-dibromo, 8-nitro, 9-nitro, 9-methylamino, 8-tert.-butyl, 9-tert.-butyl, 8-methoxy-carbonyl, 9-methoxycarbonyl, 8-methylcarbonyl, 9-methyl-carbonyl, 8-hydroxy or 8-sulphamoyl; except for R, D is unsubstituted or substituted by a member selected from a group consisting of 3-chloro, 3-bromo, 1-methyl, 3-methyl, 3methoxy, 3-nitro and 3-cyano; $An^{(-)}$ is an anion; R_3 is methyl, ethyl, n-butyl, iso-amyl, n-propyl, iso-propyl, iso-butyl, 2-methyl-propyl, pentyl, hexyl, cyclohexyl, heptyl, octyl, decyl, dodecyl, benzyl, allyl, ethoxyethyl, ethoxy-carbonylmethyl, hydroxyethyl, aminocarbonylethyl or cyanoethyl; R is 1-anilino, 2-anilino, 3-anilino, 4-anilino, 2-N-methylanilino, 2-N-ethylanilino, 2-N-butylanilino, 1-[2'-chloroanilino]-, 2-[2'-chloroanilino]-, 2-[4'-nitroanilino], 2-N-methyl-4'-nitro-anilino, 2-[4'-chloro-2'-nitroanilino]-, 2-[2'-methyl-anilino], 2-[6'-chloro-2'-methylanilino]-, 2-[4'-methylanilino]-, 1-benzylamino-, 2-benzylamino-, 3-benzylamino-, 2-N-benzyl-anilino-, 2-[2',4'-dimethyl-5-nitroanilino]-, [2',4,6'-trimethylanilino]-, 2-[2'methoxyanilino]-, 3-[2'-methoxyanilino-3-[2'-phenoxy-anilino], 2-[2'-acetoaminoanilino], 2-[2',5'-diethoxyanilino, 3-[2',5'-diethoxyanilino], 1-[3'-cyanoanilino], 2-[3'-cyanoanilino], 2-[4'-methoxycarbonylanilino], 2-[3',4'-dicyanoanilino], 3-[3',4'-dicyananilino], 2-[1'-aminonaphthyl], 2-[2'-phenylethylamino], 2-[N,N-diphenylamino 1-methylamino, 2-methylamino, 3-methylamino, 2-ethylamino, 2-n-propypamino, 3-n-propylamino, 2-isopropylamino, 2-N-n-butylamino, 2-N-cyclohexylamino, 1-N,N-dimethylamino, 1-N,N-diethylamino, 2-N,N-diethylamino, 3-N,N-diethylamino, 2-N-methyl-N-ethylamino, 2-morpholino, 2-piperidino, 2-imidazolyl-, 2-[3'-phenylpyrazolinyl-(Δ2')]-, 2-[3'-(4''-methylphenyl)-pyrazolinyl-(Δ2')-, 2-[3'-(2''-ethylphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-isopropylphenyl)-pyrazolinyl-(Δ2')-, 2-[3'-(4''-tert.-butylphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-cyclohexylphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-biphenylyl)-pyrazolinyl-(Δ2')-, 2-[3'-(4''-chlorophenyl)-pyrazolinyl-(Δ2')-, 2-[3'-(3''-chlorophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2''-chlorophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2'',4''-dichlorophenyl)-pyrazolinyl-(Δ2')], 2-[3'-(''',4''-dichlorophenyl)-pyrazolinyl-(Δ2')-, 2[3'-(4''-bromophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(3'',4''-dichlorophenyl)-pyrazolinyl-(Δ2')-]-, 2-[3'-(4''-bromophenyl)-pyrazolyinyl (Δ2')], 2-[3-(4''fluorophenyl)-pyrazolinyl-(Δ2')],-, 2-[3'-(4''-difluoromethyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-acetylphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-cyanophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-methoxycarbonylphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-methoxyphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-ethoxyphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-phenoxyphenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(4''-isopropoxyphenyl)-pyrazolinyl-(Δ2')], 2-[3'-styryl-5'-phenyl-pyrazolinyl-(66 2')]-, 2-[3'-(4''-chlorostyryl)-5'-(4''-chlorophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2'',4''-dichlorophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-2',4''-dichlorostyryl)-5'-(2'',4''-dichlorophenyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2''-thienyl)-pyrazolinyl-(Δ2']-, 2-[3'-(5''-methylthienyl-2'')-pyrazolinyl-(Δ2'')]-, 2-[3'-(2''-furyl)-pyrazolinyl-(Δ2')-, 2-]3'-[5''-(o,p,-dichlorophenyl)-furyl-2''/-pyrazolinyl-(Δ2')]-, 2[3'-(4''-pyridyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2''-benzoxazolyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2''-benzothiazolyl)-pyrazolinyl-(Δ2')]-, 2[3'-(1''-napthyl)-pyrazolinyl-(Δ2')]-, 2-[3'-(2''-naphthyl)-pyrazolinyl-(Δ2')]-, 2-[3'-phenyl-4',5'-tertamethylene-pyrazolinyl-(Δ2')], 2-[3',4'-diphenyl-pyrazolinyl-(Δ2')]or 2-[3',5'-diphenyl-pyrazolinyl-(Δ2')].

4,139,531

1-NITRO-9-ALKYLAMINOALKYLAMINOACRIDINES AND SALTS THEREOF

Andrzej Ledóchowski, Gdańsk-Oliwa; Jerzy Gieldanowski; Czesław Radzikowski, both of Wrocław; Barbara Horowska, Gdańsk-Wrzeszcz; Cecylia Kwasniewska-Rokicińska, Gliwice; Barbara Wysocka-Skrzela, Gdańsk; Lucyna Sawinska, Warsaw, and Mieczyslaw Medon, Jelenia Góra, all of Poland, assignors to Politechnika Gdanska, Gdansk-Wrzesoz, Poland

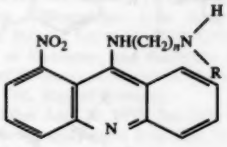
Filed Feb. 23, 1977, Ser. No. 771,416

Claims priority, application Poland, Feb. 25, 1976, 187520

Int. Cl.[2] **C07D** *219/12;* **A61K** *31/47*

U.S. Cl. 546—106 **1 Claim**

1. A compound selected from the group consisting of a 1-nitro-9-alkylaminoalkylaminoacridine of the formula I,



I

wherein R is selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, isopentyl, benzyl and cyclohexyl, wherein n is equal to 2 or 3 and salts thereof.

4,139,532

N-ACYLAMINONAPHTHALIMIDES

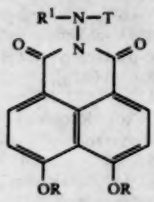
Horst Scheuermann, and Albert Hettche, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 14, 1976, Ser. No. 686,368

Int. Cl.[2] **C07D** *221/14;* **C09K** *11/06;* **C07D** *401/12, 413/12*

U.S. Cl. 546—99 **5 Claims**

1. A compound of the formula:



in which one R is identical with or different from the other R and each is alkyl of one to six carbon atoms or alkoxyalkyl of one to four carbon atoms in the alkoxy and two to six carbon atoms in the alkyl; R^1 is branched alkyl of three to six carbon atoms; and T is alkanoyl of one to six carbon atoms.

4,139,533

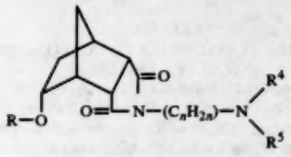
BICYCLO[2,2,1]HEPTANE-2,3-DIENDO CARBOXYLIC ACID IMIDE ESTERS OF QUINOLINE CARBOXYLIC ACID

Ronald L. Buchanan, Fayetteville; John T. Woolever, Chittenango, both of N.Y., and Alex M. Jelenevsky, Nashville, N.C., assignors to Bristol-Myers Company, New York, N.Y.

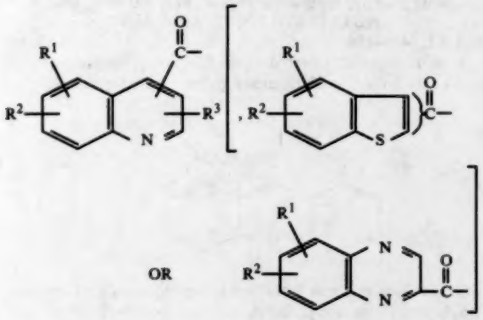
Filed Aug. 19, 1976, Ser. No. 715,951
Int. Cl.[2] C07D *401/12*
U.S. Cl. 546—156 **29 Claims**

1. A compound having the formula

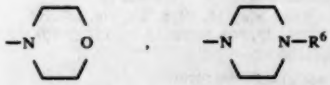
I



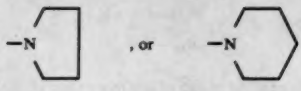
wherein R is a group of the formula



in which R^1 and R^2 are alike or different and are each hydrogen, chloro, bromo, fluoro, (lower)alkyl, nitro, trifluoromethyl, hydroxy or (lower)alkoxy, R^3 is hydrogen, chloro, bromo, fluoro, (lower)alkyl, hydroxy or (lower)alkoxy, n is an integer of 2 to 4 inclusive and R^4 and R^5 are alike or different and each is hydrogen, (lower)alkyl or, when taken together with the nitrogen, a heterocyclic ring of the formula



-continued



in which R^6 is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

4,139,534

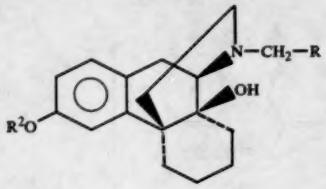
PROCESS FOR THE PREPARATION OF 14-HYDROXYMORPHINAN DERIVATIVES

Gary Lim, and Ivo Monkovic, both of Candiac, Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Feb. 17, 1977, Ser. No. 769,808
Int. Cl.[2] C07D *221/28, 217/24*
U.S. Cl. 546—74 **19 Claims**

1. A process for the preparation of compounds having the formula

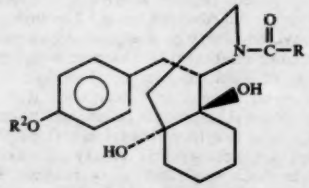
L



wherein R is cyclobutyl or cyclopropyl and R^2 is H or (lower-)alkyl comprising the consecutive steps of

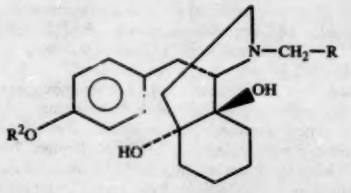
(a) reducing the compound having the formula V

V



in which R is cyclobutyl or cyclopropyl and R^2 is (lower-)alkyl with borane in an inert organic solvent to produce a boron complex of the compound having the formula VII

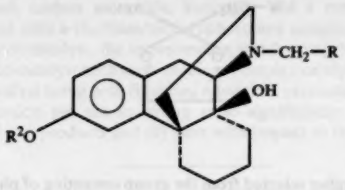
VII



in which R is cyclobutyl or cyclopropyl and R^2 is (lower-)alkyl;

(b) treating the boron complex of compound VII with acid to produce the compound having the formula LV

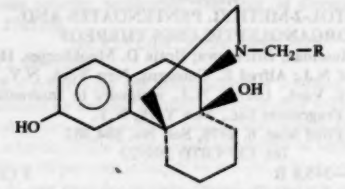
LV



in which R is cyclobutyl or cyclopropyl and R^2 is (lower-)alkyl; and, when desired,

(c) cleaving the R^2O-ether function of compound LV by treating with $NaSC_2H_5$, hydrobromic acid, boron tribromide or pyridine hydrochloride to produce the compound having the formula LX

LX



in which R is cyclobutyl or cyclopropyl.

4,139,535

3-CYANO-2-PYRIDINYLOXYMETHYL-OXAZOLIDINE DERIVATIVES

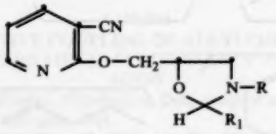
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 713,558, Aug. 11, 1976, which is a continuation-in-part of Ser. No. 533,385, Dec. 16, 1974, Pat. No. 4,000,282. This application Sep. 2, 1977, Ser. No. 830,246

Int. Cl.² C07D *213/57*

U.S. Cl. 546—275 **6 Claims**

1. A compound having the formula



wherein R is tert. butyl or isopropyl and R_1 is hydrogen.

4,139,536

PROCESS FOR THE RECOVERY OF NICOTINAMIDE

Helmut Beschke; Heinz Friedrich, both of Hanau; Klaus-Peter Müller, Bergheim, and Gerd Schreyer, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- Und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Apr. 12, 1976, Ser. No. 676,197

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1975, 2517053

Int. Cl.² C07D *213/56*

U.S. Cl. 546—317 **12 Claims**

1. A process for the recovery of nicotinamide from the reaction mixture resulting from the aqueous hydrolysis of nicotinonitrile at elevated temperature comprising converting the nicotinamide into a melt while removing the solvent at a temperature above 130° C.

4,139,537

3-ARYLOXY-1-(2- OR 4-IMINODIHYDRO-1-PYRIDYL)-2-PROPANOL ANTIARRHYTHMIC COMPOUNDS

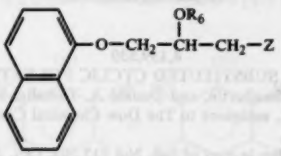
Julius Diamond, and Ronald A. Wohl, both of Morris Plains, N.J., assignors to Cooper Laboratories, Inc., Parsippany, N.J.

Filed Jun. 29, 1976, Ser. No. 701,028

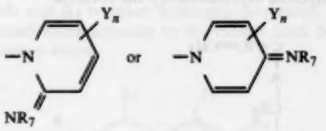
Int. Cl.² C07D *213/16*

U.S. Cl. 546—309 **9 Claims**

1. A compound having the structural formula:



wherein: Z is an iminopyridyl radical having the structural formula



wherein: Y is selected from the group consisting of hydrogen, loweralkyl, loweralkenyl, loweralkoxy, loweralkoxycarbonyl, loweracyloxy, loweracylamino, carbamoyl, cyano, halo, and n = 1 or 2 when Y is loweralkyl or halo, and n = 1 in all other cases; R_6 is selected from the group consisting of hydrogen, loweralkoxycarbonyl, loweracyl, carboxyloweracyl, carbamoyl, thiocarbamoyl and R_7 is selected from the group consisting of hydrogen, loweralkyl, loweralkenyl, loweralkynyl, C_3–C_6 cycloalkyl, C_4–C_8 cycloalkylalkyl, phenyl, benzyl, phenylethyl, loweralkoxycarbonyl, loweracyl, carboxyloweracyl, carbamoyl, thiocarbamoyl; and pharmaceutically acceptable acid addition compounds.

4,139,538

OXAZOLIDINONES AS THERAPEUTIC AGENTS

Friedrich-Gero Köllensperger, Linz, Austria; York Hartleben, Heist, Fed. Rep. of Germany; Rolf Kretzschmar, Moorrege, Fed. Rep. of Germany, and Bernhard Neteler, Oldenburg, Fed. Rep. of Germany, assignors to Nordmark-Werke GmbH, Hamburg, Fed. Rep. of Germany

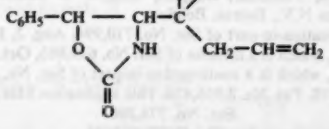
Filed Aug. 30, 1976, Ser. No. 718,610

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1975, 2538424

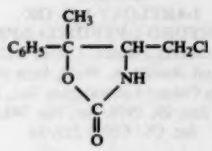
Int. Cl.² C07D *263/24*

U.S. Cl. 260—307 C **2 Claims**

1. 4-[4′-(4′-{Hydroxypropen-1-yl}-buten-1-yl)]-5-phenyl-oxazolidin-2-one corresponding to the formula



2. 4-Chloromethyl-5-methyl-5-phenyl oxazolidin-2-one corresponding to the formula



4,139,539

VINYL SUBSTITUTED CYCLIC POLYETHERS

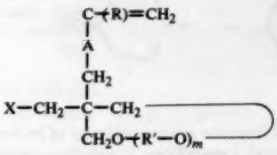
Thomas A. Chamberlin, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 517,703, Oct. 24, 1974, abandoned. This application Dec. 17, 1976, Ser. No. 751,870

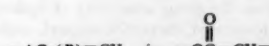
Int. Cl.[2] C07D *323/00*

U.S. Cl. 260—338 **2 Claims**

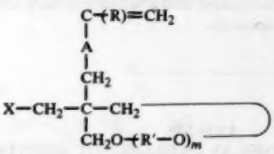
1. A compound represented by the formula



wherein m is 4, —X is methoxyl; —R'— is ethylene; and



2. A compound represented by the formula



wherein m is 4, —X is methoxyl; —R'— is ethylene; and

4,139,540

2-ARYL-2-HALOMETHYL-4-ALKENYL-1,3-DIOXOLANES

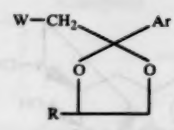
Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 710,994, Aug. 2, 1976, abandoned, which is a division of Ser. No. 619,863, Oct. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 544,157, Jan. 27, 1975, Pat. No. 3,936,470. This application Mar. 4, 1977, Ser. No. 774,290

Int. Cl.[2] C07D *317/10*

U.S. Cl. 260—340.9 R **2 Claims**

1. A chemical compound having the formula:



wherein:

W is halo;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, loweralkyl, loweralkyloxy, nitro and cyano; and

R is alkenyl, wherein said alkenyl has from 2 to 10 carbon atoms.

4,139,541

MALTOL-2-METHYL PENTENOATES AND ORGANOLEPTIC USES THEREOF

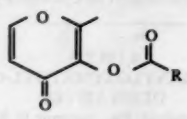
Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel, both of N.J.; Alfred E. Goossens, New York, N.Y., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 8, 1978, Ser. No. 884,382

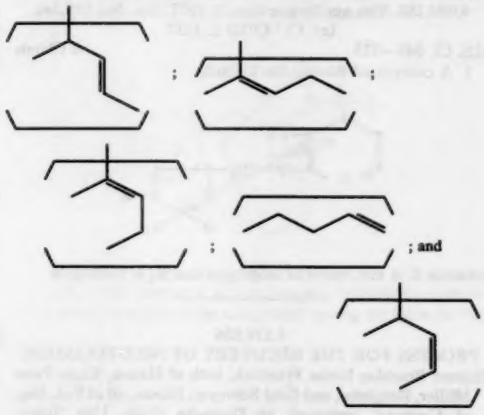
Int. Cl.[2] C07D *309/22*

U.S. Cl. 260—345.8 R **5 Claims**

1. A maltyl-2-methyl-pentenoate having the structure:



wherein R is a moiety selected from the group consisting of:



4,139,542

PROCESS FOR THE PREPARATION OF 2-ALKOXYTETRAHYDROFURANS VIA HYDROFORMYLATION OF ALLYLIC ALCOHOLS

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 7, 1977, Ser. No. 849,435

Int. Cl.[2] C07D *307/20*

U.S. Cl. 260—347.8 **13 Claims**

1. In a process for preparing a 2-alkoxytetrahydrofuran or

2-alkoxy-substituted tetrahydrofuran by contacting an allylic alcohol, carbon monoxide, hydrogen and a corresponding alkanol with a rhodium/tertiaryphosphine complex hydroformylation catalyst, the improvement which comprises using an acid co-catalyst with such rhodium complex catalyst, said acid co-catalyst being both (i) strong enough to promote the desired conversion yet not so strong as to significantly decompose initial oxo products and (ii) inert with respect to the reactants.

4,139,543

MANUFACTURE OF 2-AMINO-3-BROMOANTHRAQUINONE

Walter Schweckendiek, Ludwigshafen; Heinrich Hiller, Wachenheim, and Reinhold Kohlhaupt, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,249

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705106

Int. Cl.[2] **C07C** *97/24;* **C09B** *1/20*

U.S. Cl. 260—381 **10 Claims**

1. In a process for the manufacture of 2-amino-3-bromoanthraquinone by heating 2-aminoanthraquinone with bromine in the molar ratio 1:1 in sulfuric acid, whilst mixing, the improvement wherein crude 2-aminoanthraquinone in sulfuric acid of from 60 to 90 per cent strength by weight, which contains from 10 to 15 per cent by weight (based on sulfuric acid), of an alkanecarboxylic acid of 3 or 4 carbon atoms or of a mixture of such acids, is heated with from 1 to 1.05 moles of bromine per mole of 2-aminoanthraquinone at from 130 to 150° C., and, after cooling, the reaction product is isolated.

9. In a process for the manufacture of 2-amino-3-bromoanthraquinone by heating 2-aminoanthraquinone with bromine in the molar ratio 1:1 in sulfuric acid, whilst mixing, the improvement wherein crude 2-aminoanthraquinone in from 7 to 15 times its amount by weight of 75 per cent strength by weight sulfuric acid, which contains from 10 to 15% by weight (based on sulfuric acid) of propionic acid, is heated with from 1 to 1.05 moles of bromine per mole of 2-aminoanthraquinone at from 140 to 145° C., and, after cooling, the reaction product is isolated.

4,139,544

OXIDATIVE COUPLING OF ALKYLPHENOLS CATALYZED BY METAL COMPLEXES OF POLYIMINO ACIDS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

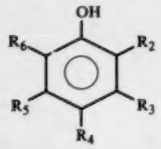
Filed Nov. 26, 1976, Ser. No. 744,960

The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.

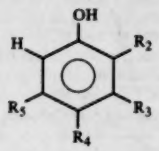
Int. Cl.[2] **C07C** *37/00, 39/12, 39/16, 41/00, 45/16, 49/62, 49/72*

U.S. Cl. 260—396 N **11 Claims**

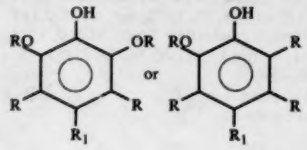
1. A method of preparing by an oxidative coupling reaction a carbon-carbon coupled condensation product of an alkyl phenol, an alkoxy phenol, or a 1-naphthol having one of the following formulas:



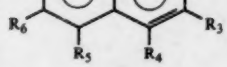
wherein R_2 and R_6 are alkyl, R_3 and R_5 are hydrogen or alkyl, and R_4 is hydrogen or methyl with the proviso that R_3 and R_5 cannot both be tertiary alkyl,



wherein R_2 and R_4 are alkyl provided that at least one of said alkyl groups is a tertiary alkyl and R_3 and R_5 are hydrogen or alkyl,

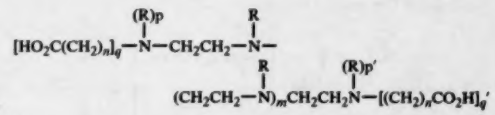


wherein each R is any alkyl group as defined above for the alkylphenols and R_1 is either hydrogen or methyl, provided that the substituents adjacent to R_1 cannot both be tertiary alkyl or tertiary alkoxy,



wherein R_2, R_3 and R_4 are hydrogen, alkyl containing from 1 to 5 carbon atoms, or alkoxy containing from 1 to 6 carbon atoms, provided that either or both R_2 and R_4 are hydrogen and R_5, R_6, R_7, and R_8 are hydrogen, alkyl containing from 1 to 5 carbon atoms or alkoxy containing from 1 to 6 carbon atoms provided that tertiary alkyl or tertiary alkoxy groups may not be attached to adjacent carbon atoms of the naphthalene molecule or

wherein R_3 is hydrogen, a primary, secondary or tertiary alkyl or an alkoxy group, R_5 is a primary or secondary alkyl group containing from 1-5 carbon atoms and R_2 and R_6 are a primary, secondary or tertiary alkyl or an alkoxy group, said method comprising contacting an aqueous mixture of the phenol or naphthol with oxygen or oxygen containing gas in the presence of a ctalyst system consisting essentially of a polyimino acetic acid metal chelate complex wherein the metal is selected from the class consisting of divalent copper, divalent nickel, divalent cobalt, divalent manganese, trivalent cerium, trivalent chromium, and trivalent iron and wherein the polyimino acid has the structural formula of



wherein each R is independently hydrogen, alkyl, hydroxy

alkyl or $-(CH_2)_nCO_2H$; n is 1 or 2; m is 0, 1, 2, 3, or 4; p is zero or 1; p' is zero or 1; q is 1 or 2; q' is 1 or 2 and wherein the sum of p plus q is 2 and the sum of p' plus q' is 2; and a sufficient amount of alkaline material to sustain the pH in the range of 8.5–9.5 during the oxidative coupling reaction, said alkaline material being selected from the group consisting of alkali metal hydroxides, carbonates and bicarbonates.

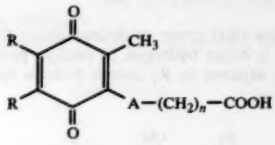
4,139,545

ARALKYL CARBOXYLIC ACID COMPOUNDS

Hiroshi Morimoto, Hyogo; Isuke Imada, Osaka; Masazumi Watanabe, Osaka, and Mitsuru Kawada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 30, 1975, Ser. No. 573,158
Claims priority, application Japan, May 2, 1974, 49-50003
Int. Cl.[2] C07C *66/00, 69/95*
U.S. Cl. 260—396 R **21 Claims**

1. A compound selected from the group consisting of compounds of the formula



wherein R represents alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms, A represents $-CH_2-$, —CO— or

and n represents an integer of from 1 to 8 when A is —CO— or

when both A is $-CH_2-$ and R is alkoxy of 1–4 carbon atoms and an integer of from 4 to 8 when both A is $-CH_2-$ and R is alkyl of 1–4 carbon atoms,

alkyl esters of said compounds wherein the alkyl moiety of said alkyl esters has 1–4 carbon atoms,

aryl esters of said compounds wherein the aryl moiety of said aryl esters has 6–7 carbon atoms, and

aralkyl esters of said compounds wherein the aralkyl moiety of said aralkyl esters has 7–8 carbon atoms,

said alkyl, aryl amd aralkyl moieties of said esters being unsubstituted or substituted by at least one of sulfo, carboxyl, formyl, hydroxyl and amino.

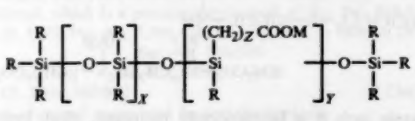
4,139,546

ANIONIC SILICONE DEFOAMER

Paul D. Berger, and Tomas J. Benavides, both of Missouri City, Tex., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,552
Int. Cl.[2] C07F *7/08*
U.S. Cl. 260—448.2 E **6 Claims**

1. A method for preparing an anionic silicone defoamer having the following formula:



wherein:

R is alkyl;

X is 1 to 20;

Y is 1 to 10;

Z is 2 to 4, and;

M is a monovalent cation;

said method comprising:

Reacting dialkyldihalosilane, trialkylhalosilane and beta-cyanoethyl or beta-cyanopropyl alkyldihalosilane in the presence of MOH, wherein M is as aforesaid and wherein the alkyl of the silane is CH_3 or C_2H_5.

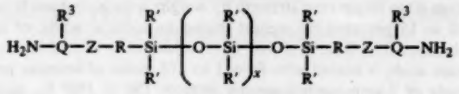
4,139,547

SILICONE CONTAINING BIS-THIOETHER AROMATIC AMINES

Abe Berger, Summit, N.J., assignor to Bergston & Associates, Inc., Summit, N.J.

Filed May 17, 1978, Ser. No. 906,877
Int. Cl.[2] C07F *7/10*
U.S. Cl. 260—448.2 N **4 Claims**

1. A silicone containing bis-thioether aromatic amine having the general formula:



wherein

Q is an aromatic nucleus

Z is sulfur, sulfoxide or sulfone

R is a bivalent group or a functional bivalent group

R^4 is a monovalent hydrocabon radical or a functional hydrocarbon radical

R^3 is a hydrocarbon radical or a functional group, and

x is 0 or greater.

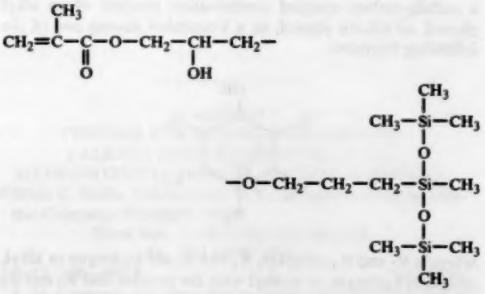
4,139,548

METHYLDI(TRIMETHYLSILOXY)SYLYLPROPYL-GLYCEROL METHACRYLATE

Kyoichi Tanaka; Kouzou Takahashi, both of Nagoya; Mitsuhiro Kanada, Aichi, and Toshiharu Yoshikawa, Nagoya, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Aichi, Japan

Filed Mar. 20, 1978, Ser. No. 888,315
Claims priority, application Japan, Oct. 20, 1977, 52-126427
Int. Cl.[2] C07F *7/08*
U.S. Cl. 260—448.2 B **1 Claim**

1. A compound of the formula:



4,139,549

PROCESS FOR THE PRODUCTION OF ORGANIC HYDROXY SILICATE COMPOUNDS AND THEIR CONDENSATION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 703,925, Jul. 9, 1976, Pat. No. 4,011,253, and a continuation-in-part of Ser. No. 589,626, Jun. 23, 1975, abandoned. This application May 8, 1978, Ser. No. 903,471

Int. Cl.[2] C07F 7/18, 7/04

U.S. Cl. 260—448.8 R 3 Claims

1. The process for the production of organic hydroxy silicate compounds and their condensation products by the following steps:

(a) adding about 100 parts by weight of dry granular alkali metal metasilicate slowly to 50 parts by weight of concentrated sulfuric acid;

(b) agitating said mixture to keep the temperature below 100° C. and oxygen evolves from the mixture, thereby

(c) producing a white granular mixture of a silicic acid compound and alkali metal sulfate;

(d) washing said mixture with water, then filtering the mixture to remove the alkali metal sulfate and then air drying at 25° to 75° C., leaving a fine white granular silicic acid compound;

(e) mixing about 50 parts by weight of said silicic acid compound with about 30 to 100 parts by weight of a polyhydroxy alcohol compound;

(f) adding an alkali catalyst in the ratio of 1% to 10% by weight of the silicic acid compound and polyhydroxy alcohol compound;

(g) heating the said mixture to just below the boiling point of the polyhydroxy alcohol while agitating for about 20 to 90 minutes, thereby

(h) producing a brown mixture of an organic hydroxy silicate compound and a poly(organic hydroxy silicate) polymer.

4,139,550

AROMATICS FROM SYNTHESIS GAS

Walter H. Seitzer, West Chester, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 722,292, Sep. 10, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,331

Int. Cl.[2] C07C 1/04

U.S. Cl. 260—449.6 R 4 Claims

1. The process for the preparation of a liquid aromatic fuel mixture suitable for use in automobile engines which comprises passing at an hourly space velocity of from about 1,000 to 10,000, a mixture of substantially pure CO and hydrogen at temperatures of from about 300° to 350° C., and pressures of from about 100 to 1500 psig over a catalyst comprising a physical mixture of a copper-chromium promoted iron and a type Y molecular sieve having a sodium cation content of less than about 0.2 wt.%, an SiO_2/Al_2O_3 weight ratio of less than about 6.0, and an NH_4O content of less than about 4 wt.%, wherein the mole ratio of CO to H_2 is in the range of about 1.5:1 to 1:1.5, and the ratio of iron catalyst to molecular sieve is about 0.1 to 10.0 by volume, and recovering said liquid aromatic mixture.

4,139,551

CATALYST FOR METHANE AND ETHANE SYNTHESIS

Mehmet N. Ozyagcilar, Columbia, S.C., assignor to The Rafel Industrial Group, Ltd., Hamilton, Bermuda

Continuation-in-part of Ser. No. 772,360, Feb. 14, 1977, abandoned. This application May 16, 1977, Ser. No. 797,294

Int. Cl.[2] C07C 1/02, 1/04, 1/12

U.S. Cl. 260—449.6 R 15 Claims

1. A method of making methane and ethane which comprises contacting hydrogen and at least one oxide of carbon in synthesis proportions at synthesis conditions with a catalyst prepared by alloying titanium and iron in a mole ratio of total titanium to total iron of greater than 0.5 but not more than 3.0 and then exposing such titanium iron alloy to hydrogen at hydriding conditions, the proportions of titanium and iron and the alloying conditions being such as to produce an alloy comprised of an iron titanium bimetallic compound effective to catalyze conversion of hydrogen and oxides of carbon to methane, and said hydriding conditions being such as to hydride at least a portion of said alloy.

4,139,552

PRODUCTION OF UNSATURATED NITRILES

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Warrensville Heights, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 4, 1974, Ser. No. 430,964

Int. Cl.[2] C07C 120/14

U.S. Cl. 260—465.3 11 Claims

1. In the process for the ammoxidation of propylene or isobutylene by contacting propylene, isobutylene or mixtures thereof with molecular oxygen and ammonia in the vapor phase in the presence of a catalyst, the improvement comprising

using as the catalyst a catalyst wherein the ratio of the elements is described by the empirical formula

$$A_a C_b D_c Fe_d Bi_e Mo_{12} O_x$$

wherein

A is thorium, zirconium, yttrium or mixture thereof;

C is an alkali metal, thallium, indium, silver, copper, a rare earth metal, boron, phosphorus, arsenic or mixture thereof; and

D is nickel, cobalt, magnesium, cadmium, calcium, zinc, beryllium or mixture thereof;

and wherein

a is greater than zero to about 4;

b is 0 to 4;

c is 0.1 to about 20;

d and e are independently about 0.1 to about 10; and

x is the number of oxygens required satisfy the valence requirements of the other elements present.

4,139,553

HYDROXYSULFOBETAINES AND THEIR USE IN ANTISTATIC FINISHING OF SYNTHETIC FIBER MATERIALS

Manfred Petzold, Düsseldorf-Holthausen; Karl Mahall, Monheim-Baumberg, and Irmhild Goebel, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

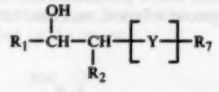
Filed Jul. 14, 1977, Ser. No. 815,727

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632988

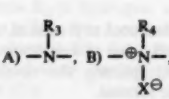
Int. Cl.[2] C07C 143/14; C09K 3/16

U.S. Cl. 260—501.12 5 Claims

1. Hydroxysulfobetaines having the formula



wherein Y represents two to five substituted nitrogens connected by $-(CH_2)_m-$ groups, selected from the group consisting of



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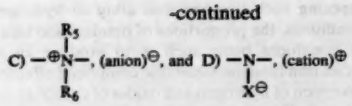
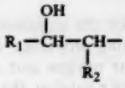


with the proviso that at least one of Y is B); R_1 is an alkyl and R_2 is a member selected from the group consisting of hydrogen and alkyl, where the sum of the carbon atoms in $R_1 + R_2$ is from 9 to 22; R_3 is a member selected from the group consisting of hydrogen, hydroxyethyl and alkyl having from 1 to 5 carbon atoms; R_4, R_5 and R_6 are individually members selected from the group consisting of hydroxyethyl and alkyl having from 1 to 5 carbon atoms; R_7 is a member selected from the group consisting of



and R_4; $X^{\ominus}$ is a member selected from the group consisting of $-(CH_2)_n-SO_3^{\ominus}$ and $-CH_2-CH(OH)-CH_2-SO_3^{\ominus}$; m is an integer from 2 to 6; n is an integer from 1 to 4; $(anion)^{\ominus}$ represents a monovalent anionic group; and $(cation)^{\oplus}$ represents a monovalent cationic group.

4,139,554

PROCESS OF PRODUCING N,N-DIMETHYLAMINO METHANE DIPHOSPHONIC ACID

Friedrich Krueger, Edingen, and Walter Michel, Ilvesheim, both of Fed. Rep. of Germany, assignors to Joh. A. Benckiser GmbH, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 896,154

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722539

Int. Cl.[2] C07F *9/38*

U.S. Cl. 260—502.5 **4 Claims**

1. In a process of producing N,N-dimethylamino methane diphosphonic acid, the steps comprising reacting N,N-dimethylformamide with phosphorous acid and phosphorus oxychloride and allowing the resulting N,N-dimethylamino methane diphosphonic acid to crystallize from the reaction mixture.

4,139,555

RECOVERY OF (1-S)-2-OXO-BORNANE-10-SULPHONATE

Rudolf Zerbes, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

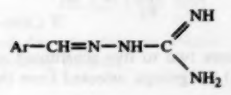
Filed May 11, 1977, Ser. No. 795,845

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620369

Int. Cl.[2] C07C *143/20*

U.S. Cl. 260—503 **12 Claims**

1. A process for the recovery of (1-S)-2-oxo-bornane-10-sulphonate from contaminated aqueous solutions comprising treating the solution with a guanidine base, in solid form or in the form of an aqueous solution, said base having the formula



I

in which

Ar denotes an unsubstituted or substituted aryl radical, or a water-soluble salt thereof, at a pH value of from about 3.5 to 7.5, and separating off and splitting the resulting guanidinium camphorsulphonate formed.

4,139,556

MONO-OL FROM DIOL AND IMPROVED CITRIC ACID PROCESS

Robert G. Wall, Pinole, and Shigeto Suzuki, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 681,678, Apr. 29, 1976, Pat. No. 4,079,088, which is a continuation-in-part of Ser. No. 535,457, Dec. 23, 1974, abandoned. This application Oct. 11, 1977, Ser. No. 841,170

Int. Cl.[2] C07C *59/16*

U.S. Cl. 562—540 **3 Claims**

1. A process for improving the yield of citric acid from a citric acid synthesis method wherein citric acid is obtained by (1) reacting isobutene or 3-methyl-3-buten-1-ol with formaldehyde in a reaction zone to obtain a mixture of 3-methylene-1,5-pentanediol and 3-methyl-2-pentene-1,5-diol and (2) oxidizing the 3-methylene-1,5-pentanediol to citric acid, which process comprises:

(a) reacting isobutene or 3-methyl-3-buten-1-ol (mono-ol) with formaldehyde to obtain a mixture of 3-methylene-1,5-pentanediol and 3-methyl-2-pentene-1,5-diol (alpha- and beta-diols respectively);

(b) separating the beta-diol from the alpha/beta-diol mixture,

(c) heating the beta-diol to a temperature between 200° and 450° C. in the presence of isobutene to obtain mono-ol;

(d) recycling the mono-ol from step (c) to step (a); and

(e) feeding the alpha-diol from step (b) to the oxidation step of the citric acid synthesis method.

4,139,557

METHOD OF PREPARING DIMETHYLACETAMIDE IN PRESENCE OF MoO_3 CATALYST

Mikhail B. Neduv, ulitsa K. Marxa, 24, kv. 8; Vladimir I. Bazakin, ulitsa Kommunisticheskaya, 1, kv. 32; Taisia I. Komarenko, ulitsa Deputatskaya, 8, kv. 45; Svetlana M. Zenchenko, ulitsa, K. Marxa, 14, kv. 5, all of Shostka Sumskoi oblasti; Zinaida F. Kirpichnikova, pereulok Tsulukidze, 14, kv. 26, Tbilisi, and Igor G. Gakh, ulitsa Shevchenko, 23, kv. 58, Shostka Sumskoi oblasti, all of U.S.S.R.

Filed Dec. 27, 1976, Ser. No. 754,435

Int. Cl.[2] C07C *102/00*

U.S. Cl. 260—561 R **1 Claim**

1. A method of preparing dimethylacetamide comprising reacting acetic acid with dimethylamine, decomposing the resulting dimethylamine acetate at a temperature ranging from 150 to 160° C., in the presence of a finely divided catalyst, molybdenum oxide, MoO_3, varying from about 0.08 to .25%, by weight of the reactants, to form dimethylacetamide and water, followed by isolation of the desired product.

4,139,558

PROCESS FOR PREPARING FREE-FLOWING 2-NITRO-4-ACETYLAMINO-ANISOLE

Gerhard Stopp, and Rolf Schimpf, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 613,832, Sep. 16, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 774,093

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1974, 2448132

Int. Cl.[2] C07C *102/00*

U.S. Cl. 260—562 A **4 Claims**

1. In a process for preparing 2-nitro-4-acetylamino-anisole wherein 4-acetylamino-anisole is nitrated with a mixture of nitric acid and sulfuric acid, the improvement for obtaining the 2-nitro-4-acetylamino-anisole in the form of a free-flowing moist material which comprises contacting the resultant nitration mixture with water at a temperature of 20° to 60° C. by metering the reaction mixture into water and controlling the cooling thereof.

4,139,559

PROCESS FOR PREPARATION OF 1-[1,5-DI-(3,3-DIMETHYLNORBORN-2-YL)-3-PENTYL]-1,5,9-TRIAZANONANE AND NOVEL INTERMEDIATES

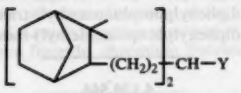
Nathaniel Grier, Englewood, N.J.; Richard A. Dybas, Center Square, Pa., and Robert A. Strelitz, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 702,317, Jul. 2, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,879

Int. Cl.[2] C07C *87/40*

U.S. Cl. 260—563 P 4 Claims

1. The compound



where Y is amino.

4,139,560

NONYLAMINES

Dieter Reinehr, Wittlingen, Fed. Rep. of Germany; Bernard Hugelin, Gaillard, France, and Eduard Troxler, Basel, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

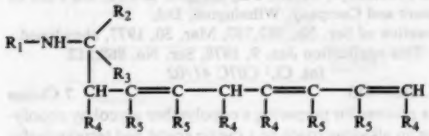
Division of Ser. No. 551,481, Feb. 20, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 775,654

Claims priority, application Switzerland, Feb. 22, 1974, 2544/74; Sep. 13, 1974, 12518/74

Int. Cl.[2] C07C *87/28*

U.S. Cl. 260—570.8 R 4 Claims

1. A compound of the formula Ia



(Ia)

wherein R_1 is γ-methoxypropyl, an unsubstituted alkyl group having 1–18 carbon atoms, an unsubstituted cycloalkyl group having 5–8 carbon atoms, a benzyl or β-phenylethyl group, R_2 is hydrogen or an unsubstituted alkyl group having 1–18 carbon atoms and R_3 is hydrogen, an unsubstituted alkyl group having 1–18 carbon atoms, a benzyl or β-phenylethyl group, a phenyl group which is unsubstituted or is substituted by halogen atoms or alkyl or alkoxy groups having 1–4 carbon atoms, a naphthyl-1 or naphthyl-2group, or R_2 and R_3 conjointly form an unsubstituted 4-membered to 11-membered alkylene chain, provided that at least one of R_1 and R_3 contains one of the aryl moieties described above, the R_4 groups are each hydrogen and the R_5 groups are independently of one another hydrogen or methyl or the R_4 groups are each methyl and the R_5 groups are each hydrogen.

4,139,561

NOVEL SUBSTITUTED AMINO-AROMATIC ACETYLENES AND THEIR METHOD OF PREPARATION

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,198

Int. Cl.[2] C07C *85/11, 85/24, 91/40*

U.S. Cl. 260—575 30 Claims

1. A process for the production of an aromatic amino compound containing an acetylene group having at least three carbon atoms and where the acetylene group is directly connected to an aromatic ring carbon atom which comprises:

contacting a charge stock comprising an aromatic nitro compound containing (i) at least one nitro group directly connected to an aromatic ring carbon atom and (ii) at least one acetylene group having at least three carbon atoms and wherein the acetylene group is directly connected to an aromatic ring carbon atom in the liquid phase with a solid catalyst consisting essentially of ruthenium and in the added presence of free molecular hydrogen under hydrogenation conditions.

4,139,562

PROCESS FOR PURIFYING CRUDE p-AMINOPHENOL

Ryuichi Yamamoto; Yutaka Hirai, and Teruyuki Nagata, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 13, 1978, Ser. No. 886,129

Int. Cl.[2] C07C *85/26*

U.S. Cl. 260—575 10 Claims

1. A process for the purification of crude p-aminophenol, including contacting the crude p-aminophenol with a solvent to extract impurities contained in the crude p-aminophenol, characterized by forming an aqueous alkali metal salt solution of the crude p-aminophenol in an atmosphere of an inert gas, and contacting said salt solution with an inactive organic solvent immiscible with water to permit the impurities to be separated therefrom in the inactive solvent by extraction.

4,139,563

α-ACETYLENIC DERIVATIVES OF AMINES

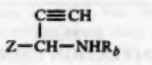
Brian W. Metcalf, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Jul. 1, 1977, Ser. No. 812,265

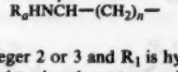
Int. Cl.[2] C07C *87/24, 69/02, 103/10;* C01B *25/26*

U.S. Cl. 260—583 H 8 Claims

1. A compound of the formula

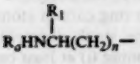


wherein Z is β-methylthioethyl, β-benzylthioethyl, S-(5'-desoxyadenosin-5'-yl)-S-methylthioethyl, γguanidinopropyl or



wherein n is the integer 2 or 3 and R_1 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms with the proviso that when R_1 is other than hydrogen, n is 2; each of R_a and R_b is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or the group

wherein R_2 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or ρ-hydroxybenzyl; with the provisos that when Z is β-benzylthioethyl or S-(5'-desoxyadenosin-5'-yl)-S-methylthioethyl, R_b is hydrogen, and when Z is



each of R_a and R_b can be the same or different; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,139,564

2-DECARBOXY-2-HYDROXYMETHYL)-16-FLUORO-PGE$_2$ COMPOUNDS

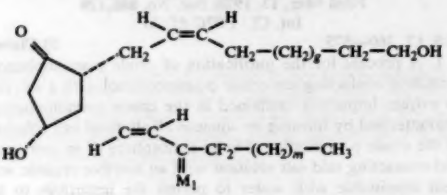
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,369, Jan. 8, 1976, Pat. No. 4,032,576. This application Apr. 6, 1977, Ser. No. 786,153

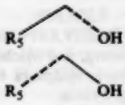
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 260—586 R **2 Claims**

1. A prostaglandin analog of the formula



wherein M_1 is



or

wherein

R_5 is hydrogen or methyl;

wherein g is one, 2, or 3; and

wherein m is one to 5, inclusive.

4,139,565

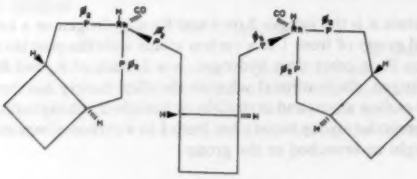
HYDROFORMYLATION USING IMPROVED CATALYSTS COMPRISING RHODIUM AND DIPHOSPHINO LIGANDS

Jerry D. Unruh, and Leslie E. Wade, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,121

Int. Cl.^{2} C07C *45/08*

U.S. Cl. 260—604 HF **4 Claims**



1. In the hydroformylation of an ethylenically unsaturated compound having from 2 to about 25 carbon atoms and free of substituent atoms other than oxygen and nitrogen with hydrogen and carbon monoxide in a liquid-phase reaction zone to produce an aldehyde derivative of said ethylenically-unsaturated compound, said hydroformylation being catalyzed by rhodium hydrido carbonyl in complex combination with a diphosphino ligand at a temperature of from about 50° C. to about 200° C. under a combined partial pressure of hydrogen and carbon monoxide of at least about one atmosphere and with the ratio of hydrogen partial pressure to that of carbon monoxide being from about 10:1 to about 1:10, the improvement which comprises:

employing as said diphosphino ligand an optically-inactive cyclic compound which is a member of the group consisting of:

trans-1,2-bis(diphenylphosphinomethyl)cyclopropane;

trans-1,2-bis(diphenylphosphinomethyl)cyclobutane:

trans-1,2-bis(diphenylphosphinomethyl)cyclopentane;

trans-9,10-bis(diphenylphosphinomethyl)-9,10-dihydrophenanthrene;

trans-1,2-bis(diphenylphosphinomethyl)-trans-decalin;

trans-2,3-bis(diphenylphosphinomethyl)-trans-decalin; and

trans-1,9-bis(diphenylphosphinomethyl)-trans-decalin.

4,139,566

SECONDARY ALCOHOL ETHOXYLATE PROCESS

Leo Kim, and Timm E. Paxson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 3, 1977, Ser. No. 838,506

Int. Cl.^{2} C07C *41/06*

U.S. Cl. 568—679 **4 Claims**

1. In the process of reacting olefins with (poly)alkylene glycols at a temperature of from about 25° C. to about 250° C. in the presence of acid catalysts to produce the corresponding (poly)alkylene glycol monoalkyl ether, the improvement which comprises carryout of the reaction in the presence of liquid sulfur dioxide.

4,139,567

METHOD FOR PREPARING COPOLYETHER GLYCOLS

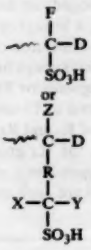
Gerfried Pruckmayr, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 782,737, Mar. 30, 1977, abandoned. This application Jan. 9, 1978, Ser. No. 868,112

Int. Cl.^{2} C07C *41/02*

U.S. Cl. 568—613 **7 Claims**

1. In a process for preparing a copolyether glycol by copolymerizing an alkylene oxide or a cyclic acetal and tetrahydrofuran using water or an alkanediol as a chain terminator, the improvement comprising using as a catalyst a polymer of monoethylenically unsaturated monomers, the polymer containing groups of the formula



where

represents the polymer chain or a segment thereof;

D is hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, a halogen or a segment of the polymer chain;

X and Y are hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, or fluorine, but at least one of X and Y must be fluorine;

R is a linear or branched linking group having up to 40 carbon atoms in the principal chain; and

Z is hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, or halogen;

the polymer being effectively free of functional groups which interfere with the reaction.

4,139,568

PROCESS FOR MAKING METHYL FLUORIDE

Daniel W. Baugh, Jr., and Marylu B. Gibbs, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1978, Ser. No. 908,308
Int. Cl.[2] C07C *17/00*
U.S. Cl. 260—653.7 **5 Claims**

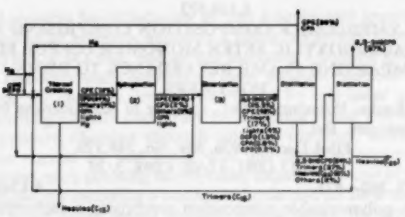
1. A process for making methyl fluoride which comprises reacting by contacting methanol and hydrogen fluoride in the vapor phase in the presence of steam at about 250° C.–400° C. in the presence of a catalyst which is activated carbon, nickel fluoride, aluminum fluoride, chromium fluoride, or a mixture thereof.

4,139,569

VAPOR PHASE CRACKING OF DICYCLOPENTADIENE AND SYNTHESIS OF 2,3-DIHYDROXYCYCLOPENTADIENE AND CYCLOPENTENE

Parley C. Lane, Jr., Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 14, 1977, Ser. No. 851,034
Int. Cl.[2] C07C *3/26, 13/12*
U.S. Cl. 260—666 A **9 Claims**



1. A process for vapor phase cracking of dicyclopentadiene, said process comprising:

providing a feedstock consisting essentially of dicyclopentadiene and cyclopentene; and

introducing said feedstock in the vapor phase into a pyrolytic chamber, said pyrolytic chamber being maintained at a temperature in the range of from about 200° to 400° C. and the residence time of the feedstock in said chamber being sufficient to effect cracking of at least some of said dicyclopentadiene to cyclopentadiene.

4,139,570

DEHYDROGENATION OF NAPHTHENE HYDROCARBONS

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 718,310, Aug. 27, 1976, Pat. No. 4,079,097, which is a continuation-in-part of Ser. No. 602,935, Aug. 8, 1975, Pat. No. 3,981,795. This application Nov. 25, 1977, Ser. No. 855,059
Int. Cl.[2] C07C *5/36*
U.S. Cl. 260—666 A **26 Claims**

1. A method for dehydrogenating a naphthene hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a nonacidic catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % bismuth; wherein the platinum group metal, catalytically available cobalt and bismuth are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,139,571

C_8 ALKYL AROMATIC HYDROCARBON ISOMERIZATION BY RECYCLING BENZENE AND TOLUENE

Roger A. Riehm, Media, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sep. 14, 1977, Ser. No. 833,218
Int. Cl.[2] C07C *15/06, 15/08, 15/24*
U.S. Cl. 260—668 A **16 Claims**

1. In a process for isomerizing a C_8 alkyl aromatic hydrocarbon-containing feedstock comprising the steps of (1) contacting said feedstock in at least one isomerization zone with a catalyst including at least one hydrogenation component and being effective to promote C_8 alkyl benzene isomerization at isomerization conditions in the presence of hydrogen at isomerization conditions to isomerize at least a portion of said C_8 alkyl aromatic hydrocarbons and to produce an effluent; (2) separating said effluent to form a hydrogen-rich fraction, a first hydrocarbon-rich fraction containing benzene and toluene and having a lower average molecular weight relative to C_8 alkyl aromatic, and a second fraction enriched in C_8 alkyl aromatic content relative to said effluent; and (3) recovering at least one C_8 alkyl aromatic product from said second fraction: the improvement which comprises subjecting at least a portion of said first hydrocarbon-rich fraction to the contacting of step (1).

4,139,572

1-ALKYL-4-ISOPROPYLBENZENE DESORBENTS FOR PARA-XYLENE

Kishio Miwa, Kamakura; Takehisa Inoue, Tokyo, and Kazuo Tsunoi, Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 816,945, Jul. 19, 1977, abandoned. This application Aug. 18, 1977, Ser. No. 825,562
Claims priority, application Japan, Aug. 30, 1976, 51-102567
Int. Cl.[2] C07C *7/13*
U.S. Cl. 260—674 SA **21 Claims**

1. A process for enrichment of para-xylene content in a feed containing a mixture of C_8 aromatic hydrocarbons including para-xylene, which process comprises:

(a) passing said feed into contact with a crystalline adsorbent capable of selectively adsorbing para-xylene from said feed, thereby adsorbing a greater percentage of para-xylene than other components of said feed on said adsorbent;

(b) desorbing para-xylene from said crystalline adsorbent by contacting said crystalline adsorbent with a desorbent containing a 1-(lower alkyl)-4-isopropylbenzene, wherein the lower alkyl group contains 1–2 carbon atoms; and

(c) removing a mixture containing a 1-(lower alkyl)-4-isopropylbenzene and para-xylene from said adsorbent.

4,139,573

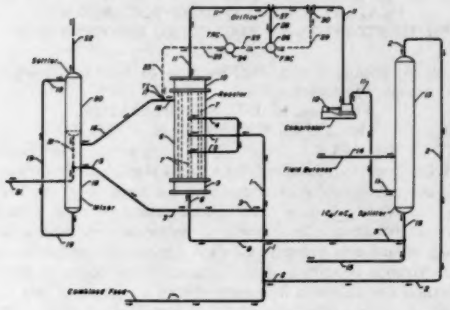
ISOPARAFFIN-OLEFIN ALKYLATION UTILIZING VAPORIZATION OF NORMAL PARAFFIN TO CONTROL THE REACTION TEMPERATURE

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 24, 1978, Ser. No. 899,753
Int. Cl.[2] C07C *3/54*
U.S. Cl. 260—683.49 **10 Claims**

1. A process for the acid-catalyzed alkylation of an isoparaffin with an olefinic feed stream which comprises the steps of:

a. separating an isoparaffin and a normal paraffin mixture in a separation zone at separation conditions of temperature and pressure to provide (i) an isoparaffin concentrate and, (ii) a normal paraffin concentrate;
b. reacting said isoparaffin concentrate with said olefinic feed stream in admixture with an acid-acting catalyst, in a reaction vessel and at alkylation conditions selected to produce a normally liquid alkylate product;



c. introducing a liquefied portion of said normal paraffin concentrate into said reaction vessel and therein vaporizing said normal paraffin via heat exchange means in said vessel in contact with the reaction mixture of step (b);
d. increasing the pressure of the resulting normal paraffin vapors from step (c) and introducing said pressurized vapors into said separation zone, and
e. withdrawing an alkylate product from step (b).

4,139,574

IMPACT RESISTANT POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING EPDM RUBBER-MODIFIED ALKENYL AROMATIC RESINS AND HYDROGENATED RADIAL TELEBLOCK COPOLYMERS

Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 28, 1977, Ser. No. 855,252
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—836 **38 Claims**

1. A thermoplastic molding composition which comprises an intimate admixture of:
(a) a polyphenylene ether resin;
(b) an alkenyl aromatic resin modified with a rubbery interpolymer of a mixture of mono-olefins and a polyene; and
(c) a hydrogenated radial teleblock copolymer comprising a vinyl aromatic compound, a saturated rubber, and a coupling agent,
said composition having improved impact strength.

4,139,575

POLYOXYMETHYLENE MOLDING COMPOSITION CONTAINING MELAMINE FORMALDEHYDE POLYCONDENSATE

Herbert Amann, and Gerhard Morlock, both of Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt Main, Fed. Rep. of Germany

Filed Aug. 19, 1976, Ser. No. 715,802
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1975, 2540207
Int. Cl.[2] C08L *61/32*
U.S. Cl. 260—849 **20 Claims**

1. In a molding composition comprising a polyoxymethylene, a melamine formaldehyde polycondensate and an antioxidation agent, the improvement wherein said melamine formaldehyde polycondensate is a finely divided, cross-linked substantially water insoluble polycondensate comprising the precipitation product obtained by reacting formaldehyde and melamine in a molar ratio between 1.2:1 and 10.0:1; and wherein said polycondensate is in an amount of about 0.001 to about 30 percent by weight, related to the total weight of said composition.

4,139,576

COATING COMPOSITIONS CONTAINING FLUOROCARBONS, POLYARYLENE SULFIDES AND POLYIMIDES

Tatsushiro Yoshimura, Takatsuki; Mutsusuke Namba, Settsu; Seisuke Suzue; Shigetake Tominaga, both of Ibaraki; Toshio Mizuno, Settsu, and Nariyoshi Hayashida, Kyoto, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 6, 1977, Ser. No. 858,000
Claims priority, application Japan, Dec. 14, 1976, 51-149960
Int. Cl.[2] C08L *79/08*
U.S. Cl. 260—857 PA **5 Claims**

1. A coating composition comprising a polyarylene sulfide resin, a fluorocarbon polymer, and at least one imido-containing resin selected from the group consisting of polyamideimide resins, polyimide resins and mixtures thereof, wherein the fluorocarbon polymer content ranges from 5 to 1/3 parts by weight per one part by weight of the total of said polyarylene sulfide resin and said imido-containing resin and the weight ratio of said polyarylene sulfide resin to said imido-containing resin ranges from 1/5 to 50/1.

4,139,577

POLYMERIZABLE COMPOSITION COMPRISING A TETRACARBOXYLIC ESTER MONOMER USEFUL FOR IMPARTING FLAME RETARDANCE TO RESIN POLYMERS

Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Dec. 7, 1976, Ser. No. 748,170
Int. Cl.[2] C08L *67/06*; C09K *3/28*
U.S. Cl. 260—871 **6 Claims**

1. A polymerizable composition comprising a carbocyclic tetracarboxylic ester monomer useful for imparting flame retardance to resin polymers having the general formula:

$$(RO_2C')_2{=}X{=}(C''O_2R')_2$$

wherein $=X=$ is selected from a tetravalent double 6 membered ring system wherein the C′ carbons are attached to a pair of vicinal carbons in said ring system and the C″ carbons are attached to another pair of vicinal carbons in said ring system wherein 1 each of R and R′ is selected from a halogenated organic radical containing at least 2 atoms of chlorine or bromine and the other of each R and R′ is selected from —H, $-CH_2CH(OH)CH_2O_2CR''{=}CH_2$, and $-CH[CH_2(OH)]CH_2O_2CR''{=}CH_2$, wherein R″ is —H or $-CH_3$; further comprising one or more ethylenically unsaturated monomers and an ethylenically unsaturated polyester resin.

4,139,578

BIS (ALLYL CARBONATE) COMPOSITIONS AND POLYMERIZATES THEREFROM

Glenn L. Baughman, Wadsworth, and Henry C. Stevens, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1975, Ser. No. 631,354
Int. Cl.[2] C08L *67/06*; G02B *5/30*
U.S. Cl. 260—871 **29 Claims**

1. A liquid polymerizable composition consisting essentially of from about 30 to about 55 weight percent bis (allyl carbonate) of linear or branched alkylene glycols, from about 20 to about 55 weight percent ethylenically unsaturated polyester having a number average molecular weight less than 2000, said polyester being the esterification reaction product of polyhyd-

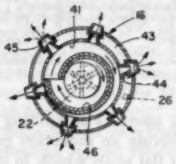
ric alcohol and a member of the group consisting essentially of unsaturated dicarboxylic acid, and saturated dicarboxylic acid and unsaturated dicarboxylic acid and from about 5 to about 30 weight percent unsaturated monomer selected from the group consisting of C_1–C_4 alkyl ester of methacrylic acid, C_1–C_4 alkyl ester of unsaturated C_4–C_6 dicarboxylic acid, and vinyl ester of C_1–C_3 saturated monocarboxylic acid.

4,139,579

APPARATUS FOR INTRODUCING AIR INTO A LIQUID INCLUDING A LIQUID PUMP MOUNTED WITHIN AN AERATOR PRESSURE CHAMBER

Albert Blum, Scheiderhöhe, 5204 Lohmar 1, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 816,025
Int. Cl.² B01F 3/04
U.S. Cl. 261—29 **8 Claims**



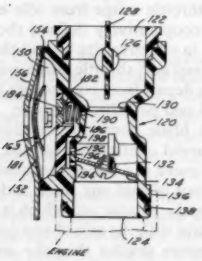
1. Apparatus for introducing air into a liquid, said apparatus comprising an assembly including a motor, an aerator coupled to said motor as a unit, said aerator including a housing having inner and outer walls defining an inner pressure chamber and an outer air chamber, jet nozzles carried by said inner walls and opening radially outwardly for directing liquid jets from said pressure chamber through said air chamber, catching nozzles carried by said outer wall and opening outwardly therefrom, each catching nozzle being aligned with one of said jet nozzles for receiving a combined liquid and air flow therefrom, liquid pump means coupled to said motor for driving thereby, said liquid pump means being mounted in said pressure chamber, a compressed air generator mounted on said motor and driven thereby, and an air conduit leading from said compressed air generator into said air chamber.

4,139,580

SELF-LIFT CARBURETOR

Charles H. Tuckey, and David M. Asher, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed May 13, 1977, Ser. No. 796,614
Int. Cl.² F02M 17/04
U.S. Cl. 261—35 **7 Claims**



1. In a self-lift, all-position carburetor to supply fuel from a fuel tank to an internal combustion engine which includes:

(a) a carburetor body having a venturi mixing passage with an inlet end and an outlet end and a main fuel port and idle fuel ports opening to said mixture passage,

(b) a fuel chamber in said body open to said ports,

(c) a diaphragm in said chamber responsive to engine pulses in said mixing passage,

(d) an inlet valve for a fuel inlet in said body,

(e) a lever actuated by said diaphragm to control the opening and closing of said inlet valve, that improvement which comprises:

(1) means to bias said diaphragm to a valve closing position having a calibration rating which requires negative pressures in the diaphragm chamber sufficient to lift fuel to the carburetor when the tank is below the carburetor and to open the inlet valve, and

(2) an on-off check valve to allow flow to said ports from said diaphragm chamber and to block positive pulses into the diaphragm chamber,

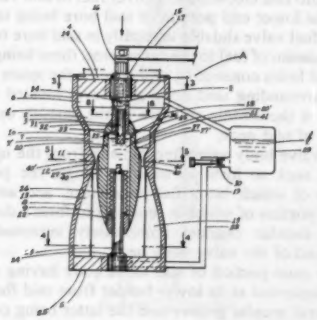
(f) said means to bias said diaphragm comprising resilient means calibrated to require a negative pressure of 4 to 12 inches of water to move the diaphragm and open the inlet valve.

4,139,581

CARBURETOR

Wilbur M. Swanson, 2301 Parkridge Ave., Saint Louis County, Mo. 63144

Filed Sep. 16, 1976, Ser. No. 723,979
Int. Cl.² F02M 29/14
U.S. Cl. 261—44 A **17 Claims**



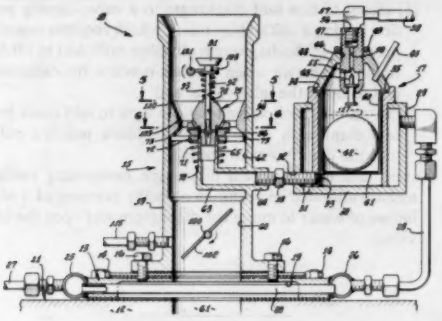
1. A carburetor comprising means defining an elongated casing having opposed upper and lower ends with an air inlet provided at said upper end and an air-fuel mixture outlet provided at the lower end, means provided in said casing between said inlet and said outlet defining a restricted, annular passage of minimum cross-sectional area with respect to said casing constituting a sonic throat for flow therethrough of air and entrained fuel, flow stabilizing means disposed on means defining said throat, comprising a plurality of circumferentially spaced-apart first indentations opening toward said passage and said flow therethrough, said first indentations extending above and below said sonic throat and a diffuser section below and communicating with said sonic throat, a vertically disposed plug provided interiorly of said casing and extending through said sonic throat constituting an inner boundary thereof, means for shifting said plug vertically reciprocally within said casing, said plug carrying second indentations opening toward said passage and said flow therethrough in normally confronting relationship to the first indentations for cooperation therewith for flow stabilization.

4,139,582

CARBURETOR

Maynard H. Collins, 396 W. 25th St., San Bernardino, Calif. 92405

Filed Dec. 15, 1977, Ser. No. 860,686
Int. Cl.[2] F02M 7/02
U.S. Cl. 261—51 3 Claims



1. In a vertical down draft carburetor the combination of:

a vertical tubular housing adapted to receive filtered air at the upper end thereof and connect at its opposite end to an engine intake manifold to deliver thereto a fuel-air mixture;

liquid fuel delivery elbow means terminating upwardly co-axially with said housing at a point approximately midway between said housing ends in an internally threaded tip;

a co-axially bored bulbous fuel valve body having a cylindrical neck, the lower extremity of which is threaded to screw into said elbow tip to deliver fuel to said valve body bore, the lower end portion of said bore being tapered;

a tapered fuel valve slidable vertically in said bore to govern the admission of fuel to the carburetor, there being a series of radial holes connecting said bore to the space immediately surrounding said neck at a level located approximately at the middle endwise of the smooth cylindrical surface of said neck;

said fuel valve body extending radially from the upper end of said neck to form an annular flange, the peripheral portion of which has a flat under face, and an upward central portion of which is removed to form a downward facing annular channel immediately surrounding the upper end of the valve body neck,

the upper main portion of said valve body having a conical shape separated at its lower border from said flange by a peripheral annular groove and the latter being connected with said annular channel by a series of downwardly converging air holes;

a collar loosely fitting said valve stem and having flat upper and lower faces, the latter face resting on top of said elbow tip and the former face being spaced by suitable shim means from said flat under face of said radial flange of said valve body by a clearance in the general order of two one-thousandths of an inch, said collar being thus gripped firmly between said elbow tip and said valve body,

there being a series of radial fuel passages bored in said stem at a level just beneath the upper face of said collar thereby reducing fuel forced through such fine orifices to a fine mist as it escapes upwardly from around said valve body neck into the turbulent air converging in said annular channel and then escapes through the annular fuel-air jet nozzle formed by the closely juxtaposed faces presented vis-a-vis by said valve body flange and said collar;

butterfly valve means mounted in a lower portion of said housing for controlling delivery of air-fuel mixture to said engine; and

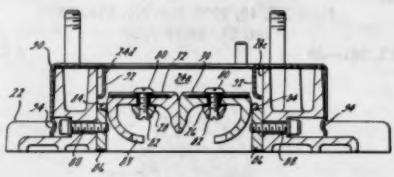
means coordinately activating the fuel valve to effect a regulation of the richness of the fuel mixture compatible with the requirements of the engine under differing load conditions.

4,139,583

THROTTLE BODY ASSEMBLY

Donald E. Riley, Farmington; Kenneth A. Graham, Birmingham; Ian J. C. Scott, Madison Heights, and S. Duane Ogden, Royal Oak, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 15, 1977, Ser. No. 860,926
Int. Cl.[2] F02M 17/40
U.S. Cl. 261—65 8 Claims



1. A throttle body assembly comprising in combination:

a throttle body having an induction port passage therein comprising four flat walls which, in transverse cross section perpendicular to the axis of the passage, define a rectangular cross section for the passage;

a pair of parallel shafts extending across said passage, each shaft being journaled for rotation on the throttle body about its own axis, one of said shafts being disposed between the passage axis and one wall of said passage, the other shaft being disposed between the passage axis and the opposite passage wall;

a first throttle blade disposed within said passage between the remaining two walls thereof and affixed to said one shaft, said first throttle blade comprising a first blade section which, in idle position, extends from said one wall partially across said passage toward said opposite wall but stops short of said other shaft;

a second throttle blade disposed within said passage between said remaining two walls thereof and affixed to said other shaft, said second throttle blade also comprising a first blade section which, in idle position, extends from said other wall partially across said passage toward said first throttle blade;

means for counter-rotating said shafts to effect counter-rotation of said throttle blades;

said two throttle blades each comprising a second blade section at the juxtaposition of the first blade sections thereof, said second blade sections providing coalescence of said throttle blades at the juxtaposition thereof at idle and over part-throttle range from idle except at one or more venturis cooperatively defined thereby which are shaped to vary in effective size as said throttle blades are displaced over said part-throttle range, said throttle blades being shaped to depart from coalescence for displacement thereof beyond said part-throttle range;

said first throttle blade comprising a third blade section presenting a curved confronting surface to said one wall which, when viewed in a transverse cross section perpendicular to the axis of said one shaft, is disposed on an at least approximately circular arc which is at least approximately concentric with the axis of said one shaft and has a radius of curvature smaller than the minimum distance from the axis of said one shaft to said one wall;

means for sealing said first throttle blade with respect to said one wall comprising a roller having its axis parallel to that of said one shaft and means for caging said roller between said one wall and said first throttle blade with said roller having a rolling sealing contact with the third blade section of said first throttle blade;

said second throttle blade also comprising a third blade section presenting a curved confronting surface to said other wall which, when viewed in a transverse cross section perpendicular to the axis of said other shaft is disposed on an at least approximately circular arc which is at least approximately concentric with the axis of said other shaft and has a radius of curvature smaller than the minimum distance from the axis of said other shaft to said other wall;

means for sealing said second throttle blade with respect to said other wall comprising another roller having its axis parallel to that of said other shaft and means for caging said last-mentioned roller between said other wall and said second throttle blade with said last-mentioned roller having a rolling sealing contact with the third blade section of said second throttle blade;

and means for sealing said two throttle blades with respect to said remaining two passage walls comprising first wiper means disposed on the first blade section of said first blade and having an overall length greater than that of the first blade section on which it is disposed with its end edges extending beyond the end edges of the first blade section on which it is disposed so that it provides a wiping sealing contact with said remaining two passage walls and second wiper means disposed on the first blade section of said second blade and having an overall length greater than that of the first blade section on which it is disposed with its end edges extending beyond the end edges of the first blade section on which it is disposed so that it provides a wiping sealing contact with said remaining two passage walls, said first and second wiper means being shaped to provide clearance for said one or more venturis.

4,139,584

CONTACT BODY FOR LIQUID AND GAS

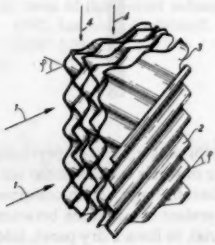
Roy B. Holmberg, Jönköping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Sep. 6, 1977, Ser. No. 830,400

Claims priority, application Sweden, Sep. 29, 1976, 7610766

Int. Cl.[2] B01D *47/00*

U.S. Cl. 261—112 **6 Claims**



1. A gas-liquid contact device comprising a contact body, means for supplying a vertical flow of liquid into said body at its upper end and means for supplying a horizontal flow of gas to said body at one edge of said body, said body comprising a plurality of parallel, folded or corrugated upright contact plates resting against each other, the folds in adjacent plates intersecting each other at angles to provide between the plates through-passages which simultaneously are passed through by the gas with substantially horizontal flow direction and by the liquid with substantially vertical flow direction, the folds in one of said adjacent plates inclined upwardly at an angle to the horizontal plane in the direction of the gas flow, and the folds in the other of said adjacent plates inclined downwardly at an equal angle to the horizontal plane in the direction of the gas flow, characterized in that the folds in said adjacent plates are formed with different radii of curvature, so that the radius of curvature of the upwardly inclined folds in said one plate is smaller than the radius of curvature of the downwardly inclined folds in said other plate, said differing radii of curvature combining to provide channeling forces for the water counteracting the tendency of the air stream to effect lateral displacement of the vertical liquid stream distributed over the plates.

4,139,585

VALVE FOR THE INTRODUCTION OF GAS

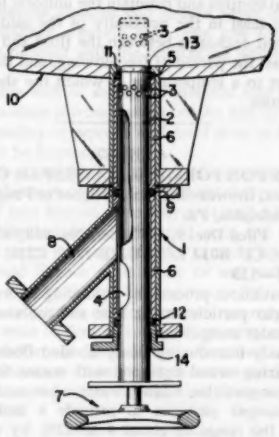
Jurgen Kirschner, Cologne; Helmut Klapp, Cologne-Pesch; Rainer Rompeltien, Monheim, and Otmar Zajicek, Cologne, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 27, 1977, Ser. No. 810,401

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632858

Int. Cl.[2] 261 *124;* B01F *3/04*

U.S. Cl. 261—64 R **1 Claim**



1. A valve for the introduction of a gas into a suspension that is sensitive to coagulation or which has a tendency to deposit sediment comprising a housing adapted to be attached to the bottom of a liquid container, said housing having an exit port at the end adjacent said attachment, an exit port at the opposite end and a gas entrance port, said housing containing a movable hollow piston in a substantially water-tight connection with said housing, said movable hollow piston being sealed at each end and having gas distribtuon jets in the annular wall adjacent said housing attachment and a gas entrance port in communication with said housing gas entrance port when said hollow piston is extended, said hollow piston being in a substantially gas-tight connection with said housing when retracted, and means for extending and retracting said movable hollow piston in said housing, whereby when said hollow piston is extended, said gas distribution jets are exposed beyond said housing and a gas path is created from said gas entrance port to and through said gas distribution jets and, when said hollow piston is retracted, said gas distribution jets are moved back into said housing.

4,139,586

METHOD OF FORMING ARTICLES FROM THERMOPLASTICS SHEET BY FREE-BLOWING

Roy A. Gasson, Crawley, England, assignor to Redifon Flight Simulation Ltd., London, England

Filed Feb. 18, 1977, Ser. No. 769,883

Claims priority, application United Kingdom, Mar. 3, 1976, 8465/76

Int. Cl.[2] B29C *17/04*

U.S. Cl. 264—544 6 Claims

1. A method for forming thermoplastic sheet without contact with a mold to provide an article with an optically-true surface finish, said method comprising the steps of heating the sheet to a uniform temperature such that the sheet acquires elastic properties, thereafter establishing a differential fluid pressure between the two faces of the sheet to effect free-blowing thereof, and providing a fluid flow, at least during the period of the said free-blowing, past at least one face of the sheet so as to control and maintain the uniform temperature of the sheet, at least in the proximity of the said one face, by providing heat exchange between the fluid and said one face during at least the period of freeblowing, and thereafter cooling the sheet to a temperature at which the sheet reacquires rigid properties.

4,139,587

PROCESS FOR FORMING FLUORSPAR COMPACTS

Robert J. Cox, Brownsville, Tex., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 9, 1977, Ser. No. 858,987

Int. Cl.[2] B01J *2/10;* C22B *1/08;* C21C *7/00*

U.S. Cl. 264—123 4 Claims

1. The continuous process for producing fluorspar compacts from fluorspar particles using lime and molasses to form an insoluble binder comprising:

continuously introducing finely divided fluorspar particles to a mixing vessel equipped with means for heating the fluorspar particles; adding water when necessary to wet the fluorspar particles to provide a moisture content within the range of about 4 to 12% by weight of the fluorspar; adding hydrated lime to the wetted fluorspar particles in the amount of about 1.5 to 3% by weight of the fluorspar (dry basis) and allowing the wetted fluorspar and hydrated lime to disperse uniformly to form a fluorspar mixture; adding molasses to the fluorspar mixture in the amount of about 2.5 to 6% by weight of the fluorspar (dry basis); and continuing heating and mechanically mixing the fluorspar mixture to a temperature not exceeding about 210° F. until the lime and molasses form a uniform coating on the fluorspar particles; and discharging the coated fluorspar particles from the mixing vessel; and

introducing the coated fluorspar particles into a cooler-dryer and simultaneously cooling and drying the coated fluorspar particles by use of a cool or cold air stream until the moisture content of the coated fluorspar particles is within the range of about 3 to 5% by weight and the temperature is within the range of about 40° to 70° F.; and discharging the cooled and dried coated fluorspar particles from the cooler-dryer; and

introducing the cooled and dried coated fluorspar particles to a compacting machine and forming compacts of the coated fluorspar particles; and discharging the compacts of coated fluorspar particles from the compacting machine; and finally

introducing the compacts of the coated fluorspar particles to a heating and curing oven and heating the said compacts to a temperature not exceeding about 230° F. until all the free moisture is removed and thereafter continuing heating the coated fluorspar compacts to a temperature not exceeding about 300° F. until the coating of lime and molasses on the fluorspar particles chemically reacts to form an insoluble binder for the fluorspar compacts.

4,139,588

METHOD OF MAKING A WATER BARRIER PANEL

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Division of Ser. No. 800,475, May 25, 1977, Pat. No. 4,103,499, which is a division of Ser. No. 626,572, Oct. 28, 1975, Pat. No. 4,048,373, and a continuation-in-part of Ser. No. 472,668, May 23, 1974, Pat. No. 3,949,560. This application Mar. 16, 1978, Ser. No. 887,291

Int. Cl.[2] B32B *19/00*

U.S. Cl. 264—232 3 Claims

1. A method for forming a water-impervious panel useful for preventing seepage of water contaminated with more than 4% sodium chloride therethrough which comprises:

disposing a soil sealant composition between opposing faces of sheet material, to form a dry panel, said sealant composition comprising bentonite; a water-soluble dispersing agent selected from the group consisting of a water-soluble salt of acetic acid, a water-soluble salt of phosphoric acid, and a water-soluble salt of boric acid; and a water-soluble polymer selected from the group consisting of polyacrylic acid, water-soluble salts of polyacrylic acid, hydrolyzed polyacrylonitrile, polyvinyl acetate, polyvinyl alcohol, copolymers of the foregoing, and a copolymer of acrylic acid and maleic anhydride, the amount of water-soluble polymer in said soil sealant composition being from 0.1% to 3.0%, by weight, and the amount of water-soluble dispersant in said soil sealant composition being from 0.1% to 3.0%, by weight, the weight ratio of water-soluble dispersant to water-soluble polymer being from 6:1–36;

wetting the dry panel with water substantially devoid of sodium chloride to cause expansion of said sealant composition.

4,139,589

PROCESS FOR THE MANUFACTURE OF A MULTI-ZONE TABLET AND TABLET MANUFACTURED BY THIS PROCESS

Monique Beringer, 2, rue Alexandre Lauly, F-68300 Saint Louis, France, and Siegfried Woltmann, Hauptstrasse 255, CH-4322 Mumpf, Switzerland

Continuation of Ser. No. 659,050, Feb. 18, 1976, abandoned.
This application Oct. 25, 1977, Ser. No. 845,025
Claims priority, application Luxembourg, Feb. 26, 1975, 71919; Feb. 2, 1976, 74291
Int. Cl.[2] A61K *9/24, 9/68*
U.S. Cl. 264—250 3 Claims

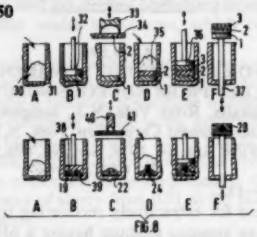


FIG. 8

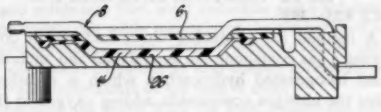
1. A process for the manufacture of an inlaid tablet, comprising the steps of incorporating into a plastic chewing gum mass a sustained-release ingredient selected from the group consisting of anti-smoking alum and antitussives; incorporating into a non-plastic tablet mass a substantially immediate-release pharmaceutically active ingredient selected from the group consisting of quinine, fennel oil and eucalyptus oil; and respectively converting said chewing gum mass and said tablet mass into the core and the outer layer of the inlaid tablet.

4,139,590

PRODUCTION OF A DUAL-LAYER FLOW CONTROL DEVICE HAVING IMPROVED BONDING BETWEEN LAYERS

Phillip L. Rubright, 1721 Larkmoor Blvd., Berkley, Mich. 48072

Division of Ser. No. 259,721, Jun. 5, 1972, Pat. No. 3,804,366.
This application Nov. 19, 1973, Ser. No. 417,345
The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.
Int. Cl.[2] B29C *5/00, 5/12;* B29D *3/00, 9/00*
U.S. Cl. 264—255 9 Claims



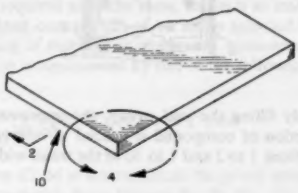
8. A method of making a composite, dual layer vane for a butterfly valve or the like wherein the vane has a relatively rigid body portion consisting primarily of a first organic resin material and an elastomeric sealing portion consisting primarily of a second organic resin material bonded to said body portion and projecting outwardly from the periphery thereof, said method comprising the steps of: pouring a quantity of said first organic resin material in liquid form into an open-face mold to a first level such that said first organic resin material is confined in a portion of the mold defining the configuration of said body portion; supporting a pivot rod on the mold such that at least a portion of said pivot rod is immersed in said first organic resin; sprinkling a selected quantity of said second organic resin in powdered form onto the surface of said first organic resin; pouring a liquid plastisol containing said second organic resin into said mold and covering the surface of said first organic resin therewith; and then curing the contents of said mold to solidify said resins and bond said first and second resins together with said pivot rod imbedded in at least the body portion of said vane defined by said first organic resin.

4,139,591

REINFORCED PLASTIC MOLDING MATERIAL

Peter L. Jurisich, 26232 Tierra Cir., Mission Viejo, Calif. 92675

Continuation of Ser. No. 333,117, Feb. 16, 1973, abandoned.
This application Jan. 17, 1975, Ser. No. 541,877
Int. Cl.[2] B29N *9/02*
U.S. Cl. 264—257 6 Claims



1. The process of manufacturing a laminating material for use in the forming of a cured composite fibrous glass and resin product comprising:

supplying a reinforcing fibrous glass mat or fabric;

supplying a release paper;

placing a plastic resin in a partially cured stage compatible with the fibrous glass on said release paper in a partially adhered manner wherein said resin can form a cured composite product with the reinforcing fibrous glass mat or fabric;

applying a thin web or strands of material into the resin to help to maintain it from flaking off the mat or fabric during any bending or movement thereof prior to forming the product to be formed; and,

impressing the combination of said release paper with said resin and thin web or strand of material therein against the surface of said fibrous glass fabric or mat whereby said release paper is exposed with said resin and reinforcing web thereunder so that said resin extends into the interstices of said fibrous glass fabric or mat sufficiently to cause it to bind to the reinforcing mat or fabric strands so that at least a portion of the fibers are secured together to allow the resin to flow in sufficient quantity substantially between all fibers to cause the resin to extend substantially into the interstices throughout the cross section of said fabric to form a product having resin content through its cross section.

4,139,592

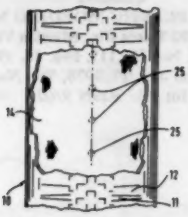
PROCESS FOR INJECTION MOLDING A VEHICLE TIRE TREAD

Achille Gallizia, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Filed Feb. 15, 1977, Ser. No. 768,872
Claims priority, application Italy, Mar. 2, 1976, 20746 A/76
Int. Cl.[2] B29D *3/02;* B29H *3/08*
U.S. Cl. 264—279 5 Claims

1. In a process for the manufacture of a motor vehicle tire by injection molding of a elastomeric compound in a composite mold having a mold cavity which corresponds 3-dimensionally to the geometry of the tire tread, said tread and said cavity having the same equatorial plane which is orthogonal to the axis of the tire, said compound being injected into said mold in dosed quantities through a plurality of openings distributed along said equatorial plane, spaced from each other by a distance which is smaller than the linear development of said cavity in the radial planes containing said axis, whereby the compound flows, which initially distribute freely in every direction starting from each individual opening, when they

subsequently meet — in directions parallel to said equatorial plane, the flows coming from the adjacent openings, progress their distribution in parallel directions to said radial planes until



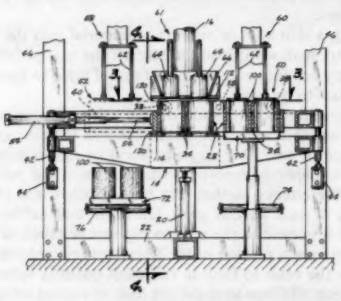
completely filling the said cavity, the improvement wherein said injection of compound is spaced at intervals within the range of from 1 to 2 and 1 to 10 of the tread width in its radial planes.

4,139,593

METHOD AND APPARATUS FOR MAKING MOLDED ARTICLES

William L. Holz, Rippey; Franklin C. Kinkade, Creston, and Fred Robbins, Jefferson, all of Iowa, assignors to Mid-Iowa Concrete Products Company, Grand Junction, Iowa

Filed Aug. 5, 1977, Ser. No. 822,254
Int. Cl.[2] B28B *21/26*
U.S. Cl. 264—333 **6 Claims**



1. A method of making molded articles comprising the steps of, providing a molding station between a pair of stripping stations with a two-section mold movable between first and second positions such that at one position ejector means at one stripping station registers with one mold section and packer head means at said molding station registers with the other mold section and at the other position ejector means at the other stripping station registers with the other mold section and said packer head means registers with said one mold section,

moving said mold to said first position,

raising the mold relative to said packer head means and said ejector means and ejecting a molded product from said one mold section while extending the packer head means through the other mold section,

filling said other mold section, and

lowering the mold thereby forming a molded product in said other mold section,

moving said mold to said second position,

raising the mold relative to said packer head means and said ejector means and ejecting a molded product from said other mold section while extending the packer head means through the one mold section,

filling said one mold section, and

lowering the mold thereby forming a molded product in said one mold section,

said lowering of said mold including lowering said mold between top and bottom table halves until said mold is substantially clear of said packer head means and said ejector means, then raising said top half relative to said bottom half and said mold and lowering said top and bottom halves until said mold is supported on a stationary support independently of said table halves and clear of said table halves whereby said mold may be moved between said first and second positions.

4,139,594

PROCESS FOR EXTRACTING TRIVALENT THALLIUM VALUES FROM AQUEOUS SOLUTIONS

Nabil M. Rizkalla, River Vale, N.J., assignor to Halcon Research & Development Corp., New York, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,549
Int. Cl.[2] C01G *15/00*
U.S. Cl. 423—112 **16 Claims**

1. A process for extractively recovering trivalent thallium values from an aqueous medium having a pH of not greater than about 6 and containing dissolved trivalent thallium and monovalent thallium values which comprises extracting the aqueous medium in the presence of an alkanoic acid, having from 2 to 4 carbon atoms and having a molecular weight of at least 74 grams per gram-mol of acid, with an inert, non-acidic organic solvent for said alkanoic acid, said solvent having a limited solubility in water, to preferentially extract dissolved trivalent thallium values into the organic solvent, and recovering (1) an extract containing the organic solvent, said alkanoic acid, and extracted trivalent thallium values as a separate phase, and (2) an aqueous raffinate containing monovalent thallium values and depleted in trivalent thallium values.

4,139,595

PRODUCING NITRIC OXIDE AND NITRIC ACID

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Feb. 6, 1978, Ser. No. 875,740
Int. Cl.[2] C01B *21/40, 21/36;* B01K *1/00*
U.S. Cl. 423—393 **7 Claims**

1. A method for producing nitric acid which comprises scrubbing a gas containing nitrogen oxides and ammonia with a liquid halogenated hydrocarbon which is a dielectric to dissolve the nitrogen compounds, adding oxygen to the solution, passing the resulting solution through an ozonizer to oxidize the nitrogen compounds to nitric oxide, extracting the effluent from the ozonizer with water to form nitric acid.

4,139,596

PRODUCING SULPHURIC ACID

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Feb. 6, 1978, Ser. No. 875,739
Int. Cl.[2] C01B *17/74, 17/68;* B01K *1/00*
U.S. Cl. 423—522 **6 Claims**

1. A method of producing sulfuric acid which comprises scrubbing a gas stream containing gaseous sulfur compounds with a halogenated hydrocarbon liquid dielectric under superatmospheric pressure, absorbing oxygen in the halogenated hydrocarbon liquid, passing the solution through an ozonator to oxidize the absorbed sulfur containing compounds to SO_3, extracting the effluent from the ozonator with water to form sulfuric acid.

4,139,597

REMOVAL AND RECOVERY OF SULFUR OXIDES FROM GAS STREAMS WITH MELAMINE

John J. Kohler, Florence; Joe Gautney, Sheffield; Yong K. Kim, and John F. McCullough, both of Florence, all of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 794,269, May 5, 1977, now Defensive Publication No. T970,008. This application Nov. 11, 1977, Ser. No. 850,784

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—243 4 Claims

1. A process for the removal and recovery of sulfur oxides from gas streams, said gas streams containing from 1 percent to 100 percent sulfur oxides by volume, which comprises the steps of:

1. contacting said gas stream in a scrubbing system with an aqueous slurry of melamine containing an oxidation inhibitor to produce a mixture of insoluble hydrated melamine sulfites and melamine sulfate while maintaining the temperature of the slurry between 20° C. and 70° C.; wherein for each mole of sulfur added in said gas stream, from 1.5 to 2.5 moles of free melamine are present in the slurry and for each pound of slurry from 0.01 to 0.5 pound of melamine is present;
2. removing the resulting reaction product slurry from the scrubbing system and separating the solids in said reaction slurry from the liquid;
3. recycling the clarified liquid phase from step 2 supra back to step 1 supra;
4. drying the separated solids from step 2 supra at temperatures between 70° C. and 105° C. to remove adhering liquid, part of the water of hydration, and a small amount of sulfur dioxide;
5. recycling the vapors from step 4 supra back to step 1 supra;
6. heating the dried solids from step 5 supra at temperatures from 105° C. to 200° C. thereby effecting the decomposition of the melamine sulfite into solid, free melamine and gaseous water and sulfur dioxide;
7. withdrawing the gaseous mixture of water and sulfur dioxide from step 6 supra as product;
8. cooling the hot solids from step 6 supra to about ambient temperature and then splitting said solids into two unequal streams;
9. recycling the larger portion of the cooled solids from step 8 supra to step 1 supra;
10. contacting the smaller portion of the cooled solids from step 8, supra, with an aqueous solution of a base stronger than melamine to convert the melamine sulfate contained in said solids into free, solid melamine and a solution of a basic sulfate salt while maintaining the temperature of the resulting reaction slurry at about ambient values; wherein for each mole of sulfate in said cooled solids, 1.5 to 2.1 chemical equivalents of the base is used;
11. separating the solids from the basic sulfate salt solution from step 10, supra, and withdrawing the basic sulfate salt solution as product;
12. washing the solids from step 11 supra with water; using the wash in step 10 supra, and recycling the washed solids back to step 1, supra.

4,139,598

CATALYTIC PREPARATION OF SOLUBLE POLY(DICHLOROPHOSPHAZENES)

Kennard A. Reynard, and Arthur H. Gerber, both of Cleveland, Ohio, assignors to Horizons Research Incorporated, Cleveland, Ohio

Division of Ser. No. 474,055, May 28, 1974, Pat. No. 4,005,171. This application Jan. 12, 1977, Ser. No. 758,740

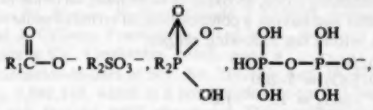
Int. Cl.[2] C01B *25/10*

U.S. Cl. 423—300 9 Claims

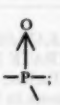
1. A process for the preparation of soluble polyhalophosphazene polymer consisting essentially of recurring structural units represented by the formula (X_2PN) and having an intrisic viscosity of about 0.01 to about 3.0 dl/g (benzene, 30° C.), said polymer being soluble in benzene, toluene, chlorobenzene, and dichlorobenzene, which comprises heating at least one cyclic oligomer represented by the formula $(X_2PN)_m$ where m is 3–7, wherein X is a halogen selected from the group consisting of F, Cl, and Br and all of the X's are not required to be identical, at temperatures of about 130° C. to 220° C. in the presence of at least one catalyst which is selected from the group consisting of phosphazene derivatives consisting of the reaction product formed by reacting (1) at least one cyclic oligomer represented by the formula $(X_2PN)_m$ in which X represents a halogen selected from the group consisting of F, Cl and Br are not all of the X's are required to be the same, and m is an integer from 3–7, with at least one salt (2) of an anion selected from the group consisting of metallic or quaternary ammonium salts in which the anion is represented by one of the following formulae:

$$[M'Z_{r+t}]^{-t}, [QX'_{r-x}]^{-(2-x)}, [NCS]^-, PF_6^-, BF_4^-, \text{ and}$$

where Z is F or Cl; M is selected from the group consisting of metals and non-metals from Groups Ia, Ib, IIa, IIb, Vb, and VIII of the Periodic Table, Al, Mo, Re, Sn, Zr, As, Sb, Ti, Pb, Mn, and Th, with the proviso that when the anion is iodide the cation is selected from alkali, alkaline earth and quaternary ammonium, r is the valence of Metal M; t is an integer designating the magnitude of the negative charge of the complex ion $[M'Z_{r+t}]^{-t}$; and Q is a metal selected from the group consisting of Hg, Cd, and Zn and X' is either Br, or I, and x is 0 or 1; and



where R_1 is a monovalent member selected from the group consisting of polyhaloalkyl, where the halogen is F, Cl or mixtures thereof, perfluoroaryl and perchloroaryl; R_2 is a monovalent member selected from the group consisting of F, Cl, lower alkyl (C_1–C_5), aryl, substituted alkyl and substituted aryl with the proviso that R_2 is not halogen then bonded to



whereby at least one X in the compound $(X_2PN)_m$ is replaced, and all of the displacing groups are not required to be the same.

4,139,599

PROCESS FOR PREPARING DICALCIUM PHOSPHATE DIHYDRATE HAVING A PORTION OF THE CALCIUM DISPLACED BY DIVALENT METAL ION

Kenneth Tomlinson, Bramhall, and Edward J. Duff, Sandbach, both of England, assignors to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 653,998, Jan. 19, 1976, Pat. No. 4,048,300, which is a continuation of Ser. No. 431,945, Jan. 9, 1974, abandoned. This application Jun. 2, 1977, Ser. No. 802,759

Claims priority, application United Kingdom, Jan. 11, 1973, 1633/73; Jul. 25, 1973, 35459/73; Jul. 25, 1973, 35471/73

Int. Cl.[2] C01B *15/16, 25/26;* A61K *7/16*

U.S. Cl. 423—308 6 Claims

1. A process for preparing dicalcium phosphate dihydrate having about 0.1–5% by weight of calcium displaced by a divalent metal ion comprising reacting with a mixture of monobasic and dibasic sodium phosphate in an aqueous solution maintained no higher than pH 5, a reactant mixture se-

lected from the group consisting of a calcium halide with non-toxic divalent metal ion halide or nitrate to form dicalcium phosphate dihydrate wherein said divalent metal ion halide or nitrate is used in amount to displace about 0.1–5% by weight of the calcium and said divalent metal ion is selected from the group consisting of zinc, copper, cadmium, nickel, cobalt, iron, manganese, chromium, magnesium, strontium and barium.

4,139,600

SYNTHESIS OF ZEOLITE ZSM-5

Louis D. Rollmann, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 22, 1977, Ser. No. 789,899
Int. Cl.[2] C01B *33/28;* B01J *29/28*
U.S. Cl. 423—329 **14 Claims**

1. A synthetic crystalline aluminosilicate zeolite having, as synthesized, a formula in terms of mole ratios of oxides in the anhydrous state as follows:

$$(0.5\text{–}10.0)R:(0\text{–}0.5)M_2O:Al_2O_3:xSiO_2$$

wherein M is an alkali metal ion, R is an alkyldiamine selected from the group consisting of pentanediamine, hexanediamine and combinations thereof or an organic nitrogen-containing cation derived from said alkyldiamine, and x is at least 5, and having the X-ray powder diffraction pattern substantially as set forth in Table I of the specification.

3. The method for preparing the crystalline aluminosilicate zeolite defined in claim 1 which comprises preparing a mixture containing sources of an alkali metal oxide, an organic nitrogen-containing oxide, an oxide of aluminum, an oxide of silicon and water and having a composition, in terms of mole ratios of oxides, within the following ranges:

$SiO_2/Al_2O_3 = 5\text{–}1000$
$H_2O/SiO_2 = 5\text{–}200$
$OH^-/SiO_2 = 10^{-10}\text{–}1.0$
$M/SiO_2 = 0.01\text{–}3.0$
$R/SiO_2 = 0.01\text{–}2.0$

wherein R is an alkyldiamine selected from the group consisting of pentanediamine, hexanediamine and combinations thereof and M is an alkali metal ion, and maintaining the mixture at a temperature of at least 100° F. until the crystals of said aluminosilicate are formed.

4,139,601

AMMONIUM NITRATE NEUTRALIZATION

Toby M. Cook; Gerald L. Tucker, and Marion L. Brown, all of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Division of Ser. No. 723,929, Sep. 16, 1976. This application Sep. 12, 1977, Ser. No. 832,468
Int. Cl.[2] C01C *1/18*
U.S. Cl. 423—396 **11 Claims**

1. In a method for neutralizing nitric acid with ammonia wherein nitric acid is fed into a first aqueous reaction zone, ammonia is fed into a second aqueous reaction zone, which has an inlet at the lower portion of said first reaction zone and it is in circulating communication therewith;

said nitric acid is circulated downward within said first reaction zone into the inlet of said second reaction zone and is substantially diluted before entering said second reaction zone;

wherein a predominant proportion of the nitric acid is reacted with said ammonia in said second reaction zone so as to form an ammonium nitrate solution; and

wherein said ammonium nitrate containing solution is removed from said second reaction zone, recirculated to said first reaction zone and ammonium nitrate product recovered from the recirculated solution before additional nitric acid flows into said recirculated solution, the improvement which comprises:

recirculating the ammonium nitrate containing solution from said second reaction zone to said first reaction zone so that the solution and gases therefrom are substantially completely introduced into said first reaction zone in sufficient force so as to create a scrubbing turbulence of said gas as gas bubbles in said first reaction zone whereby soluble components of said gas are dissolved into the solution of the first reaction zone, and wherein the velocity of the liquid within said first reaction zone flowing downward toward the inlet of said second reaction zone is less than the terminal velocity of the rising gas bubbles so that substantially all of the gas bubbles are permitted to rise and disengage from the first reaction zone and thereafter recovered.

4,139,602

PREFERENTIAL CHLORINATION OF ALUMINA IN KAOLINITIC ORES

Ronald Wyndham, New Orleans, and John C. Terry, Metairie, both of La., assignors to Toth Aluminum Corporation, New Orleans, La.

Continuation of Ser. No. 631,315, Nov. 12, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,834
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.[2] C01F *7/60*
U.S. Cl. 423—496 **12 Claims**

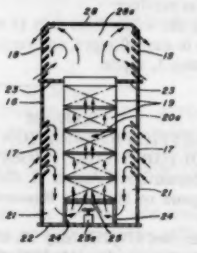
1. In a a process of carbo-chlorinating a kaolinitic ore to produce aluminum chloride comprising the steps of: drying and comminuting a kaolinitic ore to form a powdered ore; mixing and calcining the powered ore and a solid carbonaceous reductant to form a reaction mass; and carbo-chlorinating the ore to produce aluminum chloride by exposing the calcined reaction mass to a chlorinating agent; the improvement comprising: admixing at least one compound of an alkali metal with an oxyanion selected from the group consisting of carbonate, sulfate, sulfite, pyrosulfate, thiosulfate, hydroxide, oxide, oxalate, phosphate, nitrite, bicarbonate and nitrate with the reaction mass before carbo-chlorination, the amount of the compound of alkali metal with oxyanion being sufficient to provide preferential carbo-chlorination of alumina over silica in the kaolinitic ore.

4,139,603

HYDROGEN-OXYGEN RECOMBINER

Sterling J. Weems, Chevy Chase, Md., and Harold W. McCurdy, Jr., Vienna, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 387,418, Aug. 10, 1973, abandoned, which is a continuation of Ser. No. 179,077, Sep. 9, 1971, abandoned. This application May 14, 1976, Ser. No. 686,437
Int. Cl.[2] C01B *5/00;* G21C *9/00*
U.S. Cl. 423—580 **2 Claims**



1. Method of combining hydrogen and oxygen gases in a nuclear reactor system as water vapor in a non-catalytic reaction and without the use of a spark device comprising:

preheating the admixed gases to approximately 250° F

thereby drying the admixed gases and preventing corrosive damage to the recombining apparatus;

passing the admixed gases over a series of electric heating elements wherein the power density of each succeeding electric heating element is less than the preceding one thereby providing maximum overall power density with minimum heater temperature;

heating the admixed gases to a temperature of from about 1150° to 1400° F. thereby combining the hydrogen and oxygen as water vapor; and

cooling the water vapor prior to exhaust into the system by passing cooling air into contact with the water vapor.

4,139,604

SEPARATION TECHNIQUE FOR ASSAYS

Sidney Gutcho, Monsey, N.Y., and Joan K. Givas, Crystal Lake, Ill., assignors to Becton, Dickinson and Company, Rutherford, N.J.

Filed Sep. 16, 1977, Ser. No. 833,722
Int. Cl.² A61K *43/00*
U.S. Cl. 424—1 **9 Claims**

1. In a liquid phase assay wherein bound labeled substance is separated from unbound labeled substance, the improvement comprising:

adding to a solution containing bound labeled substance and unbound labeled substance a particulate adsorbent for the substance and a thickening agent different than the adsorbent which increases the viscosity of the solution to maintain the adsorbent in suspension in the solution; and

separating solution containing bound labeled substance from the thickening agent and adsorbent containing adsorbed unbound labeled substance.

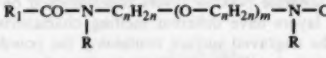
4,139,605

WATER-SOLUBLE, NON-IONIZING, RADIOPAQUE COMPOUNDS AND CONTRAST COMPOSITIONS CONTAINING THE SAME

Ernst Felder, Riva San Vitale, Switzerland, and Davide Pitré, Milan, Italy, assignors to Bracco Industria Chimica S.p.A., Milan, Italy

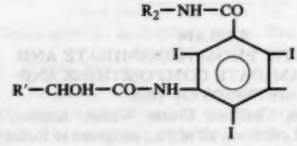
Filed Feb. 27, 1978, Ser. No. 881,567
Claims priority, application Switzerland, Mar. 28, 1977, 3806/77
Int. Cl.² A61K *29/02*; C07C *103/24, 103/26, 103/28*
U.S. Cl. 424—5 **11 Claims**

1. An α, ω-bis-[5-(dihydroxyalkyl) aminocarbonyl-3-hydroxyacylamino-2,4,6-triiodo-benzoylamino]-oxaalkane compound of the formula



wherein

R_1 is



R and R' are hydrogen or methyl,

R_2 is dihydroxyalkyl having 3 or 4 carbon atoms,

n is 2 or 3,

m is an integer between 1 and 5, and

n(m+1) is an integer between 4 and 12.

10. A contrast composition opaque to X-rays consisting essentially of a physiologically tolerated aqueous carrier liquid and an effective amount of a compound as set forth in claim 1 dissolved in said carrier liquid.

4,139,606

PREPARATION OF ANTIGEN AND TEST FOR HETEROPHIL ANTIBODY

Joseph Zichis, deceased, late of Rancho Sante Fe, Calif., by Lillian K. Zichis, executrix, P.O. Box 48, Rancho Santa Fe, Calif. 92067

Filed May 24, 1976, Ser. No. 689,308
Int. Cl.² G01N *31/00, 31/02, 33/16*
U.S. Cl. 424—12 **5 Claims**

1. The process of preparing heterophil antibody reactive antigen for serological diagnosis of infectious mononucleosis comprising the steps of:

incubating horse, mule or sheep blood in a solution of KH_2PO_4, Tris and NaN_3 or a solution of K_2HPO_4, KH_2PO_4 and NaN_3 at about pH 7 for from about 3 to about 6 days at a temperature of not more than about 36° C.; and

separating from the solution and from blood hemoglobin and proteins the white-grayish antigen formed in the preceding incubation step.

4,139,607

AEROSOL PROPELLANT FOR PERSONAL PRODUCTS

Charles W. Simons, Bedford; Gerald J. O'Neill, Arlington, and Joel A. Gribens, Framington, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 714,522, Aug. 16, 1976, Pat. No. 4,041,148, which is a continuation-in-part of Ser. No. 622,246, Oct. 14, 1975, abandoned. This application Aug. 5, 1977, Ser. No. 822,353
Int. Cl.² C09K *3/30*; A61K *7/00, 9/00*
U.S. Cl. 424—45 **8 Claims**

1. An aerosol container pressurized by a propellant system consisting essentially of liquefied bis(difluoromethyl) ether and gasous carbon dioxide.

4,139,608

ORAL COMPOSITIONS CONTAINING AN ANTICALCULUS AGENT

Ronald S. Schreiber, Jersey City, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,778
Int. Cl.² A61K *7/16, 7/18, 31/19*
U.S. Cl. 424—49 **8 Claims**

1. An oral preparation comprising a humectant vehicle containing a dental-calculus inhibiting amount of an anticalculus agent selected from the group consisting of Cis, Cis, Cis, Cis-1, 2, 3, 4-cyclopentane tetracarboxylic acid and its alkali metal salts.

4,139,609

ORAL COMPOSITIONS CONTAINING AN ANTICALCULUS AGENT

Ronald S. Schreiber, Jersey City, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,779
Int. Cl.² A61K *7/16, 7/18, 31/19*
U.S. Cl. 424—49 **8 Claims**

1. An oral preparation comprising a humectant vehicle containing a dental-calculus inhibiting amount of an antical-

culus agent selected from the group consisting of 2,3,4,5-tetrahydrofuran tetracarboxylic acid and its alkali metal salts.

4,139,610

PERMANENT WAVING COMPOSITION

Yoshimasa Miyazaki, Hirakata; Shigeru Matsumura, Kashiwa; Takayoshi Yamauchi, Sakai; Morio Harada, Nishinomiya, and Hisatoshi Shimizu, Sakai, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1977, Ser. No. 787,409

Claims priority, application Japan, Apr. 19, 1976, 51-43609

Int. Cl.[2] A61K *7/09;* **A45D** *7/04*

U.S. Cl. 424—72 **7 Claims**

1. A permanent waving composition comprising as active ingredients cysteine in an amount of about 3–15 weight % and N-acetylcysteine in an amount of about 0.2–3 weight %.

7. A method of imparting a wave to human hair which comprises contacting said hair with a composition comprising about 3 to 15 weight percent cysteine and about 0.2 to 3 weight percent N-acetylcysteine.

4,139,611

ORGANIC PEPTIDE CONTAINING SUBSTANCE RECOVERED FROM BLOOD HAVING INSULIN-LIKE ACTIVITY

Adolf Wacker, Dörthe Wacker, both Neu-Isenburg; Klaus Pöhler, Wiesbaden, and Hellmut Mittenzwei, Munich, all of Fed. Rep. of Germany, assignors to Helmut Mittenzweig, Münich, Fed. Rep. of Germany

Division of Ser. No. 748,956, Dec. 9, 1976, Pat. No. 4,085,204. This application Nov. 3, 1977, Ser. No. 848,109

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558537

Int. Cl.[2] A61K *35/14, 37/00, 37/26*

U.S. Cl. 424—101 **4 Claims**

1. An organic peptide containing substance having insulin-like activity recovered from blood or a blood component of a warm-blooded animal, obtain by the steps of pretreating the blood or blood component by diluting the blood or blood component with from about half to about four volumes of a hydrophilic diluent, adjusting the pH of the resulting solution to a value of from 2 to 4 or of from 8 to 10, incubating the pretreated blood at a temperature of from about 15° to about 40° C. for a period of at least four hours, cooling the incubated blood to a temperature of less than 10° C., dialysing the treated blood after neutralization against a membrane adapted to pass molecules having a molecular weight of less than 6000, and recovering from dialysate organic peptide substances having a molecular weight of from about 350 to about 6000, and an insulin-like activity of from about 14 to about 40 μU/mg solid.

4,139,612

PROCESS FOR MAKING AN ALUMINUM PHOSPHATE GEL

Jean-Paul Raudnitz, Paris, France, assignor to Laboratoires Biotherax, Plaine Saint-Denis, France

Continuation of Ser. No. 393,277, Aug. 31, 1973, abandoned, which is a continuation of Ser. No. 223,785, Feb. 4, 1972, abandoned. This application Mar. 9, 1977, Ser. No. 775,951

Claims priority, application France, Sep. 23, 1971, 71 34177

Int. Cl.[2] A61K *33/42*

U.S. Cl. 424—128 **4 Claims**

1. A medicinal gel comprising a mixture of an aluminum phosphate gel and an assimilable organic gel prepared from a gelling agent selected from the group consisting of gum gouar, gum tragacanth, gum arabic, gum gleditshia, agar-agar, carob flour, demethylated pectin, pectin, methyl cellulose and mixtures thereof, the ratio of organic gel/aluminum phosphate gel being from 0.4–2.3, together with sweetening and preserving agents.

4,139,613

PROCESS FOR THE PATTERNED DEPOSITION OF POWDERED THERMOPLASTIC ADHESIVE MATERIALS ON THE OUTER SURFACE OF A SURFACE FORM

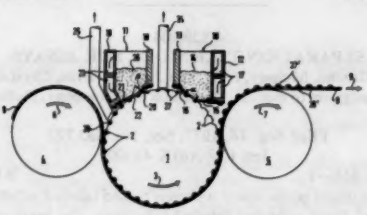
Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany

Division of Ser. No. 706,588, Jul. 19, 1976. This application Mar. 25, 1977, Ser. No. 781,326

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1975, 2532998; Aug. 19, 1975, 2536911

Int. Cl.[2] B05D *3/02, 5/00*

U.S. Cl. 427—197 **10 Claims**



1. A process for the patterned deposition of powdered thermoplastic adhesive materials on the outer surface of a substrate, the process comprising the steps of providing an engraved component having a pattern of depressions in its outer engraved face thereof, providing separate sources of supply for adhesive powders, providing said sources of supply with adhesive powders having different melting characteristics, heating the outer engraved face to be coated, causing relative movement between the outer engraved face and the sources of supply and coating a preselected area of the outer engraved face first with one of the adhesive powders to cause the powder to be deposited in the depressions, raking the preselected area of the outer engraved face with a first rake to free the outer face of the coated material except in the area of the depressions, the first rake having a setting angle extending from the outer engraved face of the engraved component which is greater than a similar angle for a second rake, then coating the preselected area of the outer face with the second of the adhesive powders having a different melting characteristic as compared to the first powder, positioning the second rake at a setting angle relative to the outer-engraved surface which is at the most, at an angle of 90 degrees, raking the preselected area of the outer face with the second rake to remove the second coat of material from the outer face except at the area of the depressions and leaving the depressions provided with separate powder layers superimposed on one another which layers have different melting characteristics, then pressing the engraved surface containing the powdered materials into contact with the substrate to cause the powder material to become adhered to the substrate, and then separating the substrate from the engraved surface to draw the powder from the depression of the engraved surface.

4,139,614

ANTHELMINTIC PHOSPHONAMIDATE AND PHOSPHORAMIDATE COMPOSITIONS AND METHODS OF USE

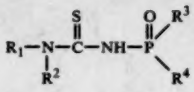
Edward E. Kilbourn, Chalfont; Ernest Weiler, Ambler, and William D. Weir, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 1, 1976, Ser. No. 662,744

Int. Cl.[2] A61K *31/66;* **C07F** *9/38*

U.S. Cl. 424—211 **16 Claims**

1. An anthelmintic composition for oral administration comprising a pharmaceutically acceptable carrier and an anthelmintically effective amount of a compound having the formula:



wherein

R^1 is (a) a cyclohexyl group,

(b) a benzyl or phenethyl group,

(c) a phenyl group substituted with up to 2 methyl groups, methoxy groups, dimethylamino groups, hydroxymethyl groups, chlorine atoms, trifluoromethyl groups, hydroxyl groups, or cyano groups,

(d) a fluoroenyl group,

R^2 is a hydrogen atom or a benzyl group;

R^3 is an ethoxy group;

R^4 is an ethoxy group, an isobutylthio group, or a sec-butylthio group.

4,139,615

O-ALKYL-S-ALKYL-O-(4-TRIFLUOROMETHYLTHIO-PHENYL)-(THIONO)-THIOL-PHOSPHORIC ACID ESTERS AND PESTICIDAL COMPOSITIONS AND METHODS

Hellmut Hoffmann, Wuppertal; Erich Klauke; Ingeborg Hammann, both of Colonge, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

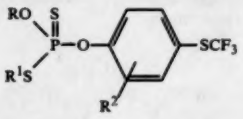
Filed May 19, 1977, Ser. No. 798,746

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625764

Int. Cl.[2] A01N *9/36*; C07F *9/165*

U.S. Cl. 424—216 **8 Claims**

1. An O-alkyl-S-alkyl-O-(4-trifluoromethylthio-phenyl)-thiolphosphoric acid ester of the formula



in which

R and R^1 each independently is alkyl, and

R^2 is hydrogen or 3 methyl.

2. A method of combating insect, acarid or nematode, pests which comprises applying to the pestes or a habitat thereof of an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,139,616

FUNGICIDAL COMPOSITIONS BASED ON PHOSPHOROUS ACID ESTERS AND SALTS THEREOF

Jacques Ducret; Guy Lacroix, both of Lyon, and Jean-Michel Gaulliard, Orlienas, all of France, assignors to EPRO, France

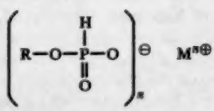
Filed Dec. 10, 1974, Ser. No. 531,387

Claims priority, application France, Dec. 14, 1973, 73 45627

Int. Cl.[2] A01N *9/36*

U.S. Cl. 424—222 **29 Claims**

1. A fungicidal composition for controlling fungus disease in plants comprising as an active material, a fungicidally effective quantity of at least one compound of the formula



in which

R is selected from a member of the group consisting of an alkyl, halogen-substituted alkyl or nitro-substituted alkyl radical, the alkyl portion of said alkyl radicals containing from 1 to 8 carbon atoms, an alkenyl, halogen-substituted alkenyl, alkinyl, halogen-substituted alkinyl and an alkoxy-substituted alkyl radical, the hydrocarbon portion of said alkenyl, alkinyl and alkoxy-alkyl radicals containing from 2 to 5 carbon atoms, M is selected from a member of the group consisting of an ammonium cation; ammonium substituted by a member of the group consisting of 1 to 4 alkyl or hydroxy-alkyl radicals each containing from 1 to 5 carbon atoms, 1 to 2 cyclohexyl radicals and a phenyl radical; and a cation of a metal from the group consisting of the alkali metals, alkaline earth metals, and polyvalent metals of zinc, manganese, copper (I) and (II), iron, nickel and aluminum and n is an integer equal to the valency of M in combination with an agriculturally acceptable carrier.

4,139,617

19-OXYGENATED-ANDROST-5-ENES FOR THE ENHANCEMENT OF LIBIDO

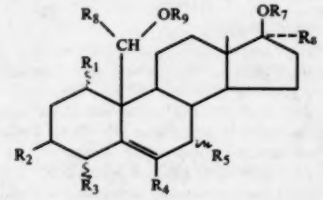
Joyce F. Grunwell, Hamilton, Ohio, and Vladimir Petrow, Chapel Hill, N.C., assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 469,477, May 13, 1974. This application Feb. 7, 1977, Ser. No. 766,613

Int. Cl.[2] A61K *31/56, 31/58*

U.S. Cl. 424—238 **4 Claims**

1. A method of enhancing the libido of mammals in need thereof which comprises the administration to such mammals of a libido enchancing effective amount of a 19-oxygenated-androst-5-ene having the formula



wherein

R_1, R_3, R_4 and R_5 are hydrogen and methyl,

R_2 is selected from the group consisting of H_2, oxo and $H(OR_{10})$,

R_6 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms, lower alkynyl having from 2 to 6 carbon atoms and when taken together with OR_7 is oxo,

R_7, R_9 and R_{10} are each selected from the group consisting of hydrogen, acyl having from 1 to 12 carbon atoms, an ether radical selected from the group consisting of lower alkyl having from 1 to 3 carbon atoms, trialkylsilyl in which the alkyl group has from 1 to 5 carbon atoms, triphenylsilyl, 2-tetrahydropyranyl, 4-tetrahydropyranyl, 1-cycloalkenyl having from 5 to 7 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms, and

R_8 is hydrogen and when taken together with OR_8 is oxo.

4,139,618

CEPHALOSPORIN TYPE ANTIBACTERIALS

Philip J. Beeby, Melbourne, Australia, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

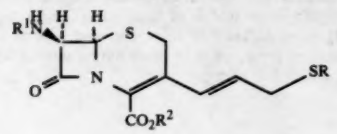
Continuation-in-part of Ser. No. 605,109, Aug. 15, 1975, Pat. No. 4,049,806, and a continuation-in-part of Ser. No. 621,717, Oct. 14, 1975, Pat. No. 3,983,113, and a continuation-in-part of Ser. No. 664,599, Mar. 8, 1976. This application Jun. 28, 1976, Ser. No. 700,697

The portion of the term of this patent subsequent to Sep. 28, 1993, has been disclaimed.

Int. Cl.[2] **C07D** *501/36*

U.S. Cl. 424—246 **59 Claims**

1. A compound having the formula:

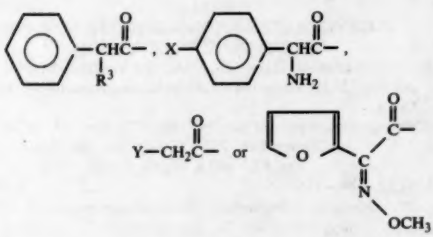


I

wherein:

R is 2-methyl-1,3,4-thiadiazol-5-yl, 3-methyl-1,2,4-thiadiazol-5-yl, or 2-methyl-1,3,4-oxadiazol-5-yl;

R^1 is a group having the formula:



wherein R^3 is hydrogen, hydroxy, sulfo or carboxy;

X is hydrogen or hydroxy; and Y is thiophen-2-yl, phenoxy, trifluoromethylthio, (1H)-tetrazol-1-yl, sydnon-3-yl or cyanomethylthio; and

R^2 is hydrogen or a protecting group selected from the group of benzhydryl, benzyl, o-nitrobenzyl, p-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, t-butyl, pivaloyloxymethyl, phenacyl and polyhaloalkyl having two to six carbon atoms; and pharmaceutically acceptable salts thereof when.

59. An antibacterial composition comprising an effective amount of a compound of claim **1** wherein R^1 is other than hydrogen, or a pharmaceutically acceptable acid salt thereof, and mixtures of such compounds, with a suitable carrier.

4,139,619

6-AMINO-4-(SUBSTITUTED AMINO)-1,2-DIHYDRO-1-HYDROXY-2-IMINOPYRIMIDINE, TOPICAL COMPOSITIONS AND PROCESS FOR HAIR GROWTH

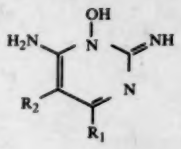
Charles A. Chidsey, III, Denver, Colo., assignor to The Upjohn Company, Kalmazoo, Mich.

Continuation of Ser. No. 689,473, May 24, 1976, abandoned, which is a continuation of Ser. No. 579,559, May 21, 1975, abandoned, which is a continuation of Ser. No. 396,820, Sep. 13, 1973, abandoned, which is a continuation of Ser. No. 213,743, Dec. 29, 1971, abandoned. This application Aug. 19, 1977, Ser. No. 826,180

Int. Cl.[2] **A61K** *31/535, 31/505;* **A61L** *9/04*

U.S. Cl. 424—45 **9 Claims**

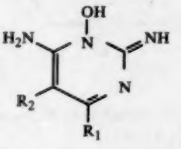
1. A topical composition for application to mammalian skin comprising an effective amount of a compound of the formula:



wherein R_1 is a moiety selected from the group consisting of moieties of the formula

wherein R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower aralky, and lower cycloalkyl, and taken together R_3 and R_4 may be a heterocyclic moiety selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, hexahydroazepinyl, heptamethylenimino, octamethylenimino, morpholino, and 4-lower-alkylpiperazinyl, each of said heterocyclic moieties having attached as substituents on the carbon atoms 0–3 lower alkyl groups, hydroxy or alkoxy, and wherein R_2 is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkoxyalkyl, lower cycloalkyl, lower aryl, lower aralkyl, lower alkaryl, lower alkaralkyl, lower alkoxyaralkyl, and lower haloaralkyl and the pharmacologically acceptable acid addition salts thereof, in association with a topical pharmaceutical carrier selected from the group consisting of ointments, lotions, pastes, jellies, sprays, and aerosols.

4. A process for increasing the rate of terminal hair growth in mammalian species comprising the application to mammalian skin at the locale of terminal hair of an effective amount of a compound of the formula:



wherein R_1 is a moiety selected from the group consisting of moieties of the formula

wherein R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower aralkyl, and lower cycloalkyl, and taken together R_3 and R_4 may be a heterocyclic moiety selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, hexahydroazepinyl, heptamethylenimino, octamethylenimino, morpholino, and 4-lower-alkylpiperazinyl, each of said heterocyclic moieties having attached as substituents on the carbon atoms 0–3 lower alkyl groups, hydroxy or alkoxy, and wherein R_2 is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkoxyalkyl, lower cycloalkyl, lower aryl, lower aralkyl, lower alkaryl, lower alkaralkyl, lower alkoxyaralkyl, and lower haloaralkyl and the pharmacologically acceptable acid addition salts thereof, in association with a topical pharmaceutical carrier.

4,139,620

1-SUBSTITUTED-3-AMINOETHOXYPYRROLIDINES AND USE THEREOF

Robert F. Boswell, Jr., and Robert L. Duncan, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 754,928, Dec. 28, 1976, Pat. No. 4,096,311. This application Dec. 5, 1977, Ser. No. 857,477

Int. Cl.[2] C07D *413/12;* A61K *31/535*

U.S. Cl. 424—248.57 9 Claims

1. A pharmaceutical composition having hypotensive activity comprising (a) from 5 milligrams to 500 milligrams of a 1-substituted-3-aminoethoxypyrrolidine selected from those having the formula:

wherein;

R represents benzyl, 2-ethoxyphenoxylower-alkyl, 2-methoxy-4-acetylphenoxylower-alkyl, 4-fluorophenoxy-lower-alkyl, 2-methoxyphenoxylower-alkyl, or 2-piperidinoethyl, and

Am is morpholino, and

(b) a pharmaceutically acceptable carrier.

9. 1-Benzyl-3-(2-morpholinoethoxy)pyrrolidine dioxalate.

4,139,621

N-(4-SUBSTITUTED-3,5-DICHLORO-PHENYL)-PIPERAZINES

Derek V. Gardner, Bishops Stortford, and Alexander C. Goudie, Harlow, both of England, assignors to Beecham Group Limited, United Kingdom

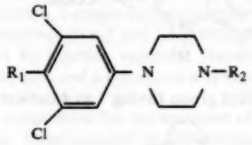
Filed Dec. 5, 1977, Ser. No. 857,773

Claims priority, application United Kingdom, Dec. 10, 1976, 51611/76

Int. Cl.[2] C07D *295/14, 295/20, 295/12*

U.S. Cl. 424—250 25 Claims

1. A compound of the formula:



[(III)]

wherein R_1 is fluoro, chloro, methyl, nitro, hydroxy, methoxy, cyano, amino, methylamino or dimethylamino; and

R_2 is hydrogen or tetrahydropyranyl, alkyl of 1 to 4 carbon atoms, $CO.R_3$ or CO_2R_3 wherein R_3 is hydrogen or alkyl of 1 to 4 carbon atoms;

or an acid addition salt thereof.

17. A pharmaceutical composition comprising a tranquillizing amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

4,139,622

METHOD OF CONTROLLING FUNGI USING PHTHALAZINE COMPOUNDS

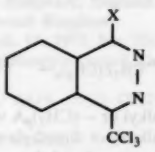
Eugene F. Rothgery, North Branford, and Hansjuergen A. Schroeder, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 20, 1977, Ser. No. 844,004

Int. Cl.[2] C07D *237/30;* A61K *31/495*

U.S. Cl. 424—250 5 Claims

1. A method of controlling fungi which comprises contacting said fungi with a fungicidally effective amount of a compound having the formula



where X is either a halo group or a lower alkoxy group.

4,139,623

CYCLIC-SUBSTITUTED DERIVATIVES OF 1-AMINO-2-PROPANOL

Knut A. Jaeggi, Basel; Franz Ostermayer, Riehen, and Herbert Schroter, Füllinsdorf, all of Switzerland, assignors to C-G Corp., Ardsley, N.Y.

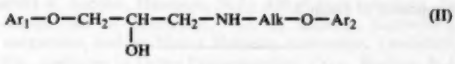
Division of Ser. No. 574,785, May 5, 1975, Pat. No. 4,027,027. This application Mar. 14, 1977, Ser. No. 777,222

Claims priority, application Switzerland, May 14, 1974, 6582/74

Int. Cl.[2] A61K *31/505;* C07D *239/34*

U.S. Cl. 424—251 7 Claims

1. A cyclic-substituted derivative of 1-amino-2-propanol of the formula



(II)

wherein Ar_1 denotes phenyl substituted by lower alkyl or denotes pyrimidinyl and Ar_2 denotes phenyl substituted by carbamoyl or denotes pyrimidinyl with the proviso that Ar_1 denotes phenyl substituted by lower alkyl if Ar_2 denotes pyrimidinyl or Ar_1 denotes pyrimidinyl if Ar_2 denotes phenyl substituted by carbamoyl, and Alk represents lower alkylene which separates the nitrogen atom from the oxygen atom by at least two carbon atoms, such derivative being present in the form of a racemate, racemate mixture, optical antipodes or pharmaceutically usable salts thereof.

6. A pharmaceutical preparation for producing a β-receptor-blocking, blood pressure lowering and vaso-dilatory effect in the treatment of arrythmias and angina pectoris in a warm-blooded animal, which comprises a therapeutically effective amount of a compound defined in claim 1, or a pharmaceutically usable salt thereof, together with a pharmaceutically usable excipient.

4,139,624

ALKOXYPYRIDYL SUBSTITUTED ALKANES

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to SmithKline & French Laboratories Limited, Welweyn Garden City, England

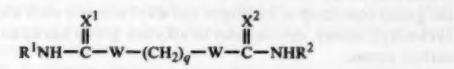
Filed Jul. 18, 1977, Ser. No. 816,420

Claims priority, application United Kingdom, Jul. 28, 1976, 31392/76

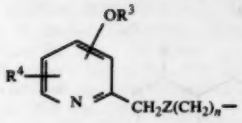
Int. Cl.[2] A61K *31/44;* C07D *213/78*

U.S. Cl. 424—263 10 Claims

1. A compound of the formula



wherein X^1 and X^2, are each sulphur; R' is a grouping of the structure



wherein R^3 is lower alkyl or $-(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen, or methylamino; or $-OR^3$ and R^4 can together form a $-O(CH_2)_bO$-group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 has the same scope as R′ or is a grouping of the structure:

$$Het\text{-}(CH_2)_{m'}Z'(CH_2)_{n'}-$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring such as imidazole, pyridine, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole or thiadiazole which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z′ is sulphur or methylene; m′ is 0, 1 or 2; n′ is 2 or 3 and the sum of m′ and n′ is 3, 4; W is NH_2; and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

9. A method of inhibiting H-2 histamine receptors which comprises administering orally or parenterally to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,139,625

5-(SUBSTITUTED TRIPHENYLMETHYL)PICOLINAMIDES AND THEIR USE AS ANTI-ACNE AGENTS

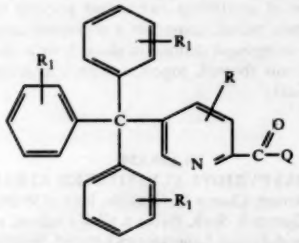
Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 636,010, Nov. 28, 1975, Pat. No. 4,044,140. This application Aug. 12, 1977, Ser. No. 824,028

Int. Cl.[2] A61K *31/455*; C07D *213/56*

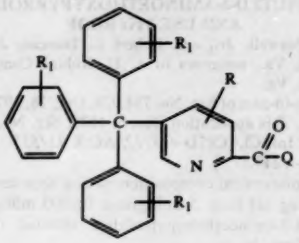
U.S. Cl. 424—266 **14 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable salts thereof, wherein R is hydrogen or alkyl; each R_1 is a member selected from the group consisting of hydrogen, halogen, hydroxy, alkyl, cycloalkyl, alkoxy, cycloalkoxy, trifluoromethyl and phenyl; Q is a member selected from the group consisting of NR_2R_3, $-NR_2$-alkylene-OH, pyrrolidino or pyrrolidino alkoxy, R_2 and R_3 which may be the same or different are members selected from the group consisting of hydrogen and alkyl wherein each alkyl, cycloalkyl, alkoxy, cycloalkoxy or alkylene group has up to 12 carbon atoms.

7. A method of eliciting an anti-acne effect which comprises topically administering a therapeutically effective quantity of a compound of claim 1 of the formula:



and the pharmaceutically acceptable salts thereof, wherein R is hydrogen or alkyl; each R_1 is a member selected from the group consisting of hydrogen, halogen, hydroxy, alkyl, cycloalkyl, alkoxy, cycloalkoxy, trifluoromethyl and phenyl; Q is a member selected from the group consisting of NR_2R_3, $-NR_2$-alkylene-OH, pyrrolidino or pyrrolidino alkoxy, R_2 and R_3 which may be the same or different are members selected from the group consisting of hydrogen and alkyl wherein each alkyl, cycloalkyl, alkoxy, cycloalkoxy or alkylene group has up to 12 carbon atoms.

4,139,626

ANTHELMINTIC 5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATES

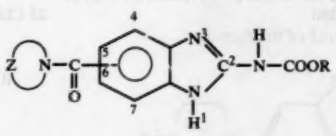
Colin Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 668,778, Mar. 19, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 758,112

Int. Cl.[2] C07D *401/10, 403/10*; A61K *31/445*

U.S. Cl. 424—267 **22 Claims**

19. A method for controlling helminths in mammals which comprises administering an anthelmintically effective amount of a compound selected from the group of compounds represented by the formula:



(I)

where R is a lower alkyl group having 1 to 4 carbon atoms;

is a saturated 5, 6, 7 or 8 membered heterocyclic ring containing 1 nitrogen as the only hetero atom; the

substitution being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

4,139,627

ANESTHETIC LOZENGES

Philip A. Lane, and Bruce A. Brown, both of Brooklyn, N.Y., assignors to Beecham Inc., Clifton, N.J.

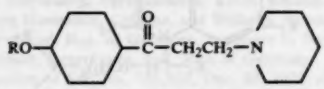
Continuation-in-part of Ser. No. 839,795, Oct. 6, 1977, abandoned. This application Nov. 7, 1977, Ser. No. 848,819

Int. Cl.[2] A61K *31/445, 9/00, 47/00*

U.S. Cl. 424—267 **20 Claims**

11. A lozenge comprising an anesthetically effective amount

of a pharmaceutically acceptable acid addition salt of the compound of the formula



wherein R is alkyl of 2 to 8 carbon atoms, and an amount of a pharmaceutically acceptable acid selected from the group consisting of citric acid, fumaric acid, malic acid, tartaric acid, lactic acid, adipic acid and phosphoric acid sufficient to stabilize said salt intimately mixed in a hard candy base, said amount being from about 0.2% to about 1.0% by weight of lozenge.

4,139,628

AMINO-SPIRO[OXA(OR THIA)CYCLOALKANE-PENAM]-CARBOXYLIC ACID DERIVATIVES

Ludovic Rodriguez, Brussels; Jacques Leclercq, Braine l'Alleud; Pierre Ykman, and Eric Cossement, both of Brussels, all of Belgium, assignors to U C B, Societe Anonyme, Belgium

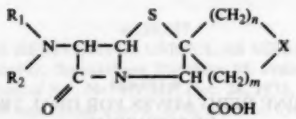
Filed Jan. 16, 1978, Ser. No. 869,860

Claims priority, application United Kingdom, Jan. 18, 1977, 1906/77

Int. Cl.[2] A61K *31/43;* **C07D** *499/44*

U.S. Cl. 424—271 **13 Claims**

1. An amino-spiro[oxa(or thia) cycloalkane-penam]carboxylic acid derivative compound of the formula



wherein X is a sulfur or oxygen atom or a sulfinyl group,

n is 1 or 2,

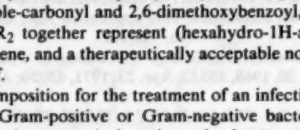
m is 1 or 2,

R_1 is a hydrogen atom and

R_2 is a radical selected from the group consisting of 2-phenyl-acetyl, 2-amino-2-phenylacetyl, 5-methyl-3-phenyl-4-isoxazole-carbonyl and 2,6-dimethoxybenzoyl, or

R_1 and R_2 together represent (hexahydro-1H-azepin-1-yl) methylene, and a therapeutically acceptable non-toxic salt thereof.

12. A composition for the treatment of an infectious disease caused by Gram-positive or Gram-negative bacteria, which comprises a pharmaceutical carrier and a therapeutically effective amount of an amino-spiro[oxa(or thia) cycloalkanepenam]-carboxylic acid derivative compound of the formula



wherein X is a sulfur or oxygen atom or a sulfinyl group,

n is 1 or 2,

m is 1 or 2,

R_1 is a hydrogen atom and R_2 is a radical selected from the group consisting of 2-phenylacetyl, 2-amino-2-phenylacetyl, 5-methyl-3-phenyl-4-isoxazolecarbonyl and 2,6-dimethoxybenzoyl, or

R_1 and R_2 together represent (hexahydro-1H-azepin-1-yl)methylene, and a therapeutically acceptable non-toxic salt thereof.

4,139,629

PSEUDOMONIC ACID AMIDE ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, England, assignor to Beecham Group Limited, United Kingdom

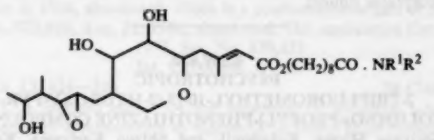
Filed Feb. 14, 1977, Ser. No. 768,057

Claims priority, application United Kingdom, Feb. 20, 1976, 6884/76

Int. Cl.[2] A61K *31/35;* **C07D** *309/06*

U.S. Cl. 424—283 **7 Claims**

1. A compound of formula:



wherein R^1 and R^2 are the same or different and each is hydrogen or alkyl of 1 to 6 carbon atoms.

5. A compound of claim 1 in pharmaceutical dosage form with a pharmaceutically acceptable carrier, said compound being present in an amount effective to combat *Neisseria gonorrhoeae* upon oral, rectal or parenteral administration.

4,139,630

NONIONIC SURFACE ACTIVE ANTI-VIRAL AGENTS

Samuel S. Asculai, Hampton, N.J.; Alfred B. Kupferberg, deceased, late of Somerville, N.J. by Beatrice Kupferberg, coexecutor, and by Meyer Halpern, coexecutor, Lauderhill, Fla., assignors to Ortho Pharmaceutical Corp., Raritan, N.J.

Division of Ser. No. 529,180, Dec. 3, 1974, Pat. No. 4,020,183. This application Dec. 13, 1976, Ser. No. 749,956

Int. Cl.[2] A61K *31/35, 31/34*

U.S. Cl. 424—283 **6 Claims**

1. A method of inactivating herpes simplex virus infectivity in humans which comprises applying to the affected area an effective amount for treating herpes simplex virus of a nonionic surfactant in a pharmaceutically acceptable carrier, said nonionic surfactant having at least one ester or ether-ester linkage between the hydrophobic and hydrophilic portions of the molecule.

4,139,631

ESTERS OF DISUBSTITUTED ISOBUTYRIC ACIDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Isaac Karadavidoff, Paris; Milorad Stjepanovic, Chatou; Michele Moreau, and Philippe Rohrbach, both of Paris, all of France, assignors to Bottu, Nanterre, France

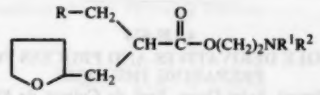
Filed Nov. 11, 1977, Ser. No. 850,844

Claims priority, application France, Nov. 18, 1976, 76 34702

Int. Cl.[2] A61K *31/34;* **C07D** *307/16*

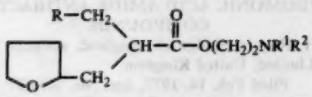
U.S. Cl. 424—285 **9 Claims**

1. An ester having the formula



in which R is selected from the group consisting of biphenylyl, norbornyl and para-cyclohexyl phenyl, R^1 is a lower alkyl group and R^2 is a lower alkyl group, and salts thereof with pharmaceutically acceptable acids.

8. A pharmaceutical composition which comprises (a) a pharmaceutically effective amount of an ester having the general formula



in which R is selected from the group consisting of biphenylyl, norbonyl and para-cyclohexylphenyl, R^1 is a lower alkyl group, and R^2 is a lower alkyl group, or a salt of said ester with a pharmaceutically acceptable salt, and (b) a pharmaceutically acceptable diluent.

4,139,632

PSYCHOTROPIC 2-TRIFLUOROMETHYL-10-[3-(3-HYDROXY-PYRROLIDINO)-PROPYL]-PHENOTHIAZINE COMPOUNDS

Noriyasu Hirose, Kokubunji, and Shizuo Kuriyama, Kami-Fukuoka, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1976, Ser. No. 714,322

Claims priority, application United Kingdom, Aug. 29, 1975, 35815/75

Int. Cl.[2] A61K *31/54;* **C07D** *279/28*

U.S. Cl. 424—247 **2 Claims**

1. A member selected from the group consisting of 2-trifluoromethyl-10-[3-(3-hydroxy-pyrrolidino)-propyl]-phenothiazine and a pharmacologically acceptable acid addition salt thereof.

2. A psychotropic composition which comprises a psychotropically acceptable amount of a member selected from the group consisting of 2-trifluoromethyl-10-[3-(3-hydroxypyrrolidino)-propyl]-phenothiazine and a pharmacologically acceptable acid addition salt thereof in admixture with a pharmaceutically acceptable carrier therefor.

4,139,633

PHARMACEUTICAL PREPARATIONS FOR THE TREATMENT OF HYPERTONIA

Hellmut Brunner, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 512,747, Oct. 7, 1974, abandoned, which is a continuation of Ser. No. 260,681, Jun. 7, 1972, abandoned. This application Feb. 27, 1976, Ser. No. 661,892

Claims priority, application Switzerland, Jun. 15, 1971, 8705/71

Int. Cl.[2] A61K *31/40, 31/135*

U.S. Cl. 424—274 **7 Claims**

1. A pharmaceutical preparation with anti-hypertensive properties comprising an amount of 20 mg to 160 mg of a beta-blocking agent selected from the group consisting of 1-(2-allyloxyphenoxy)-2-hydroxy-3-isopropylaminopropane or 1-[4-(2-methoxyethyl)-phenoxy]-2-hydroxy-3-isopropylaminopropane in the free form or in the form of its non-toxic salts and an amount of 10 mg to 25 mg of 2-chloro-5-(1-hydroxy-3-oxo-1-ioindolinyl)-benzene-sulphonamide.

4,139,634

INDOLE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Charles Pigerol, Saint-Ouen; Paul de Cointet de Fillain, Sisteron; Pierre Eymard, Fontaine; Jean-Pierre Werbenec, Eysines, and Madeleine Broll, St. Egreve, all of France, assignors to Labaz, Paris, France

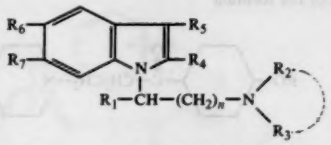
Filed May 20, 1977, Ser. No. 798,802

Claims priority, application France, Jun. 17, 1976, 76 18364

Int. Cl.[2] A61K *31/40;* **C07D** *209/08, 209/30, 401/06*

U.S. Cl. 424—274 **8 Claims**

1. A compound of the formula:



wherein R_1 represents a hydrogen atom, R_2 and R_3, which are the same or different, each represent a hydrogen atom, a methyl or ethyl radical, R_4 represents a phenyl radical, R_5 represents a hydrogen atom, R_6 represents an amino, methylamino or dimethylamino radical, R_7 represents a hydrogen atom, and n is 1 or 2 and its pharmaceutically acceptable acid addition salts.

5. A pharmaceutical composition for treating pathological states of depression or aggressivity in a subject in need of such treatment, containing as essential active principle at least one compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof in association with a pharmaceutical carrier or excipient therefor.

4,139,635

CYSTEAMINE DERIVATIVES FOR ORAL TREATMENT OF SEBORRHEA

Gregoire Kalopissis, and Georges Manoussos, both of Paris, France, assignors to L'Oreal, France

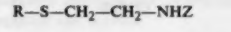
Division of Ser. No. 653,526, Jan. 29, 1976, Pat. No. 4,035,492, which is a division of Ser. No. 468,595, May 9, 1974, Pat. No. 3,950,542, which is a division of Ser. No. 140,956, May 6, 1971, Pat. No. 3,821,405, which is a continuation-in-part of Ser. No. 706,652, Feb. 19, 1968, Pat. No. 3,629,452, and Ser. No. 801,154, Feb. 20, 1969, abandoned. This application Apr. 22, 1977, Ser. No. 790,000

Claims priority, application Luxembourg, Feb. 21, 1967, 53029; Feb. 20, 1968, 55522; Apr. 23, 1971, 63056; Apr. 23, 1971, 63057

Int. Cl.[2] A61K *31/16, 31/165, 31/18*

U.S. Cl. 424—320 **2 Claims**

1. A method for treating a scalp, characterized by an excessive secretion of sebum, to improve the condition thereof by reducing said excessive secretion of sebum comprising orally administering to a human being having a scalp so characterized an effective amount of a therapeutic composition comprising an ingestible carrier admixed with a non-toxic active compound having the formula



wherein

R is selected from the group consisting of alkyl, wherein the alkyl has 1–18 carbon atoms, alkenyl having 3–18 carbon atoms, propyne-2-yl and mono- and dihydroxy alkyl wherein the alkyl moiety has 2–4 carbon atoms, and

Z is selected from the group consisting of —COR′ and —SO_2R″ wherein R′ is selected from the group consisting of lower alkyl having 1–6 carbon atoms, phenyl, benzyl and tolyl, and R″ is selected from the group consisting of lower alkyl having 1–4 carbon atoms, phenyl and tolyl.

4,139,636

N-PHENYL-N'-BENZOYL-UREAS AND PESTICIDAL COMPOSITIONS AND USES THEREFOR

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

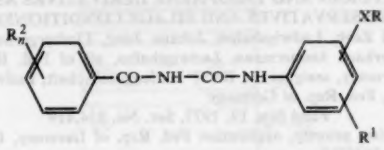
Continuation of Ser. No. 755,903, Dec. 30, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 882,295

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601780

Int. Cl.[2] A01N *9/12, 9/20;* C07C *127/00*

U.S. Cl. 424—322 10 Claims

1. An N-phenyl-N'-benzoylurea of the formula



in which

R represents halogenoalkyl with 1 to 4 carbon atoms,

R^1 represents hydrogen or halogen,

R^2 represents halogen, nitro, alkyl with 1 to 3 carbon atoms or alkoxy with 1 to 3 carbon atoms,

X represents an oxygen atom or sulfur atom, and

n denotes 0, 1, 2, 3, 4 or 5.

4,139,637

QUINONE DERIVATIVES USEFUL AS MEDICAMENTS

Maurice Rouchy, Bosseval par Donchery 08, France

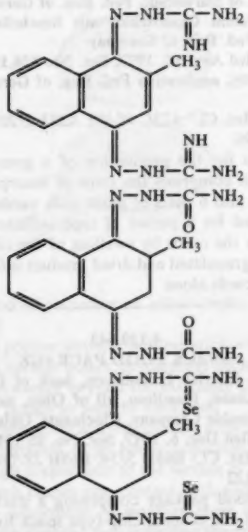
Continuation of Ser. No. 429,227, Dec. 28, 1973, abandoned. This application Jun. 9, 1976, Ser. No. 694,491

Claims priority, application France, Dec. 28, 1972, 72.46658

Int. Cl.[2] A61K *31/175, 31/555, 31/535, 31/445*

U.S. Cl. 424—323 4 Claims

1. A method of treating a viral disease in an animal which comprises administering to the afflicted animal an antiviral dose of the following compound or its isomer:



4,139,638

METHODS FOR THE TREATMENT OF HIRSUTISM

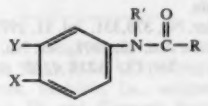
Rudoiph O. Neri, Hawthorne, and John G. Topliss, West Caldwell, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 725,822, Sep. 23, 1976, which is a division of Ser. No. 505,116, Sep. 11, 1974, Pat. No. 3,995,060, which is a continuation-in-part of Ser. No. 264,655, Jun. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 146,461, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 876,999, Nov. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 734,854, Jun. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 573,836, Aug. 22, 1966, abandoned. This application Oct. 3, 1977, Ser. No. 839,151

Int. Cl.[2] A61K *31/165*

U.S. Cl. 424—324 16 Claims

1. A method useful for the treatment of hirsutism which comprises administering to mammals suffering from hirsutism a therapeutically effective quantity for treating hirsutism of a substituted anilide having the structural formula:



or the non-toxic pharmaceutically acceptable salts thereof, wherein X is a member selected from the group consisting of nitro, trifluoromethyl, chloro, bromo and iodo; Y is a member selected from the group consisting of hydrogen, halogen, nitro, lower alkyl, lower alkoxy, lower alkanoyl, polyfluoroloweralkoxy, polyfluoroloweralkyl and trifluoromethylthio, with the proviso that when Y and R' are both hydrogen, X is other than iodo; R' is a member selected from the group consisting of hydrogen and alkyl having less than 5 carbon atoms, and R is cyclopropyl; cyclobutyl or branched chain alkyl having up to 8 carbon atoms.

4,139,639

FIXATION OF APM IN CHEWING GUM

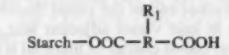
Bernard J. Bahoshy, Mahopac, and Robert E. Klose, West Nyack, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 761,836, Jan. 24, 1977, abandoned. This application Oct. 28, 1977, Ser. No. 847,390

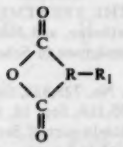
Int. Cl.[2] A23G *3/30*

U.S. Cl. 426—3 14 Claims

1. A chewing gum composition which comprises gum base, flavor, a bulking agent and L-aspartyl-L-phenylalanine methyl ester wherein the L-aspartyl-L-phenylalanine methyl ester is fixed in an encapsulating agent composition and the ratio of encapsulating agent composition to L-aspartyl-L-phenylalanine methyl ester is between about 10:1 to about 2:1 and the encapsulating agent composition consists of gum arabic and the reaction product of a compound containing a polyvalent metallic ion, with an ungelatinized starch acid-ester of a substituted dicarboxylic acid, such starch acid-esters represented diagrammatically by the following formula:



where R is a radical selected from the class consisting of dimethylene and trimethylene radicals, and R_1 is a hydrocarbon constituent selected from the class consisting of alkyl, alkenyl, aralkyl or aralkenyl groups, the above-described ungelatinized starch acid-esters are prepared by reacting an ungelatinized starch, in an alkaline medium, with a substituted cyclic dicarboxylic acid anhydride having the following formula:



where R and R_1 represent the same substituent groups as are listed above for those same symbols, substituted cyclic dicarboxylic anhydrides falling within this formula are the substituted succinic and glutaric acid anhydrides whereby the conversion of L-aspartyl-L-phenylalanine methyl ester to diketopiperazine is greatly reduced.

4,139,640

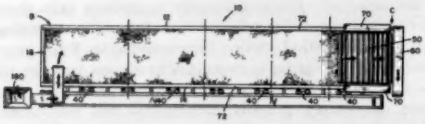
METHOD OF EFFECTING THE AEROBIC THERMOPHILIC DECOMPOSITION OF ORGANIC WASTE MATERIALS

Carl E. Kipp, Jr., Dayton, Ohio, assignor to Paygro, Inc., South Charleston, Ohio

Continuation of Ser. No. 378,331, Jul. 11, 1973, abandoned. This application Jan. 23, 1978, Ser. No. 871,721

Int. Cl.[2] A23B *4/12*

U.S. Cl. 426—55 **14 Claims**



1. A process for the aerobic decomposition of animal and other solid organic waste material solely by the action of the host thermophilic bacteria inherently in said material which comprises the steps of:

(a) sequentially introducing individual charges of undecomposed organic waste material to a substantial and predetermined depth into the full width of an empty open space at one end of an elongate open-topped composting vessel having upstanding side and end walls and a substantially flat, coplanar perforate bottom, said material introduced into the vessel substantially free of overlying relationship or intermixing with the last previously added charge of material already present in the vessel immediately in advance of said open space;

(b) maintaining all charges of the material in the vessel in a quiescent state as and until the last added charge of material has attained thermophilic temperatures;

(c) then simultaneously agitating, intermixing and turning, while sequentially advancing in a step-by-step manner the individual charges of material in the vessel toward the other end thereof in the same order in which the individual charges of material were introduced therein, wherein the depth of each charge of advanced material is restored to substantially the original predetermined depth and width to which said individual charge was initially deposited in the empty space at said one end of the vessel, said step-by-step advance accomplished by first removing the oldest, fully decomposed, pasteurized charge of material from the said other end of the vessel thereby providing an empty space in said vessel adjacent said other end into which the next oldest charge of material is then advanced, and after which each of the next progressively older charges of material are sequentially advanced one-by-one toward the said other end of the vessel for in each instance providing a corresponding empty space into which the next subsequently added charge of material is deposited with the foremost end of each but the oldest subsequent charge contacting the rearmost end of the preceding charge and wherein each said subsequently advanced charge of material is substantially free of overlying relationship or intermixing with the next adjacent previously added charge;

(d) intermittently supplying, selectively and independently, air under pressure via said perforate bottom to and throughout each individual charge of material in the vessel whenever the oxygen content of any individual charge falls below a predetermined value, at such rates as to augment and promote the growth of the thermophilic bacteria in each particular charge of the material in the vessel.

4,139,641

FURAN AND THIOPHENE DERIVATIVES AS PRESERVATIVES AND SILAGE CONDITIONERS

Bernd Zeeh, Ludwigshafen; Johann Jung, Limburgerhof, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,419

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645715

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—69 **7 Claims**

1. A preserved and ensilaged animal feedstuff which comprises: an animal feedstuff and, incorporated therein as a preservative an effective amount of at least one furan or thiophene derivative of the formula

I,

where X denotes oxygen or sulfur, R denotes the radicals —CHO, —CN or $COOR^3$, or the vinylogous radicals —CH=CH—CHO, —CH=CH—C≡N or —CH=•CH—$COOR^3$, R^3 denoting hydrogen, a cation equivalent or alkyl of 1 to 4 carbon atoms, and n denotes one of the integers 0, 1, 2 and 3.

4,139,642

DIETETIC FOODSTUFF AND ITS PRODUCTION

Roland Vogel; Heinrich J. Nikolaus; Peter Müller, and Winfried Trinkaus, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 824,194

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637426

Int. Cl.[2] A23C *19/00;* A23J *1/20*

U.S. Cl. 426—96 **10 Claims**

1. A process for the production of a granulated dietetic foodstuff which comprises the steps of incorporating 2 to 5 parts of casein into 6 parts of moist milk curds; allowing the mixture to stand for a period of time sufficient to bind the excess water in the curds by swelling of the casein; whereby formation of a granulated and dried product is facilitated compared to milk curds alone.

4,139,643

SNACK FOOD PACKAGE

Diana L. Hix; Charles L. Johnson, both of Cincinnati, and Harold D. Abner, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

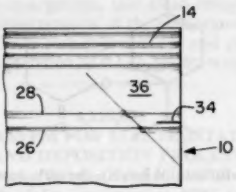
Filed Dec. 6, 1977, Ser. No. 857,941

Int. Cl.[2] B65D *5/54;* B65B *23/00*

U.S. Cl. 426—122 **1 Claim**

1. A snack food package comprising a stack of frangible, uniformly sized and shaped, chip-type snack food products, a protective liner adapted to support and protect the stack, and

an enveloping pouch constructed of a foil laminate having low permeability to vapors and gases and which is resistant to greases and oils, said laminate comprising an inner, heat sealable ply and an outer, high strength ply of thermoplastic material, a pair of transverse lines of weakness formed in said foil laminate by thinning of the outer ply along a line which extends full width near the top of the laminate and which in the formed pouch have their various parts in general alignment, said lines of weakness being spaced a small distance apart, a fin seal extending lengthwise of the pouch and bonding the side edges of the laminate together, a full length pleat formed in a



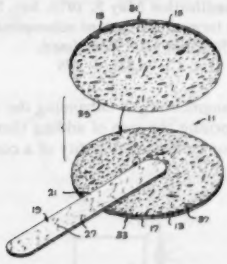
sidewall of the pouch and having an inner fold, said pouch encircling and closely conforming to the lateral periphery of said stack and protective member with the pleat maintained in flat condition, said pouch having transversely extending end heat seals, one closing the bottom of said pouch and another closing the top of said pouch at a location slightly above said lines of weakness, a cut made through the laminate intermediate the lines of weakness and near the end of the top heat seal toward which the inner fold of the pleat faces, and a sealed area around said cut which is adapted to block gas and vapor transmission from the cut in the laminate to the pouch interior.

4,139,644

METHOD OF BAKING AND PRODUCT THEREOF

Edward S. Stephenson, 3129 Durand Dr., Hollywood, Calif. 90028

Filed Dec. 12, 1977, Ser. No. 859,339
Int. Cl.[2] A23L *1/01*
U.S. Cl. 426—134 **5 Claims**



1. The method of preparing an edible cookie item comprising the steps of

positioning a porous wettable holding stick within the center of a moist cookie dough preparation such that the stick extends outwardly beyond the extremity thereof,

allowing the dough to wet the stick, and

baking the preparation at a temperature sufficient to bake the dough preparation to an edible condition and to fix the baked dough preparation to the surface of the stick; such that the stick comes into contact with and thus becomes wetted by adsorption of moisture from the dough and expands very slightly, thus enlarging the pores into which the dough expands as it is baked at the same time the dough presses against the stick, thus fixing the dough to the stick.

4,139,645

COLORING AGENTS FOR EDIBLE MATERIALS

Raymond E. Werner, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 11, 1977, Ser. No. 823,801
Int. Cl.[2] A23L *1/275*
U.S. Cl. 426—250 **10 Claims**

1. A method of imparting a red hue to edible acidic materials which comprises incorporating into said edible acidic materials, in an amount effective to impart red hue thereto as a coloring agent, a stabilized solid solution consisting essentially of 0.1 to 40 percent by weight of FD & C Red No. 3 and 99.9 to 60 percent by weight of edible gelatin, said solid solution optionally containing sufficient amounts of edible colorants selected from the group consisting of FD & C Blue No. 1, FD & C Blue No. 2, FD & C Yellow No. 5 and FD & C Yellow No. 6 to impart a desired shade of red hue to said edible acidic materials.

4,139,646

PROCESS FOR TREATING COTTONSEED MEATS

Edward A. Gastrock, Metairie, La., assignor to Charles L. Stewart, Glencoe, Ill. and Gastrock Protein Corporation, Metairie, La.

Filed Sep. 8, 1976, Ser. No. 721,203
Int. Cl.[2] A23J *1/14*
U.S. Cl. 426—430 **12 Claims**

1. A process for treating cottonseed meats to separate intact the pigment glands and to produce a protein-rich flour concentrate, said process comprising:

dry disintegration of unextracted dry cottonseed meats,

forming a slurry of said dry disintegrated meats and a nonpolar solvent,

comminuting said disintegrated meats in said slurry,

feeding the comminuted slurry sequentially through at least three cyclonic separations to obtain an overflow and an underflow from each separation,

recovering the protein-rich flour concentrate from the overflow of the first cyclonic separation,

recovering the underflow from the first cyclonic separation which underflow contains solids comprising coarse cottonseed meats,

returning said coarse cottonseed meats of the underflow solids from the first cyclonic separation to said slurry,

returning the overflow of each subsequent cyclonic separation to the immediate preceeding cyclonic separation,

directing the underflow from each cyclonic separation, except the last, to the next cyclonic separation, and

directing the underflow from the last cyclonic separation to a high-gossypol content meal recovery operation.

4,139,647

METHOD OF PREPARING A FRUIT OR VEGETABLE PUREE

George Douglas, Los Angeles, Calif., assignor to Selective Licensing Incorporated, Los Angeles, Calif.

Continuation-in-part of Ser. No. 736,879, Oct. 29, 1976, abandoned. This application Oct. 4, 1977, Ser. No. 839,199
Int. Cl.[2] A23L *1/20, 1/212*
U.S. Cl. 426—482 **2 Claims**

1. The method of forming a puree of a fruit or vegetable product which comprises, heating a chamber and flushing oxygen therefrom by continuously passing a dry inert gas heated to a temperature of between 280° F. and 300° F. through said chamber, introducing an unpeeled fruit or vegetable product into said chamber, hot slicing the product in the chamber with preheated knives to produce pieces having a minimum dimension of from ¼ inch to 3/16 inch and a maximum dimension of from ¼ inch to 1¼ inches, maintaining the

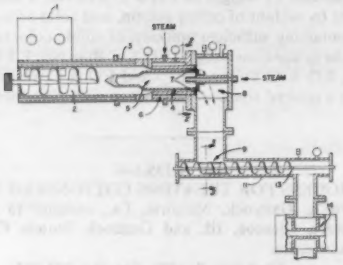
sliced product in the chamber for a length of time sufficient to inactivate the enzymes therein, and then macerating the product to produce a puree and separating the puree from the peel and fiber.

4,139,648

PROTEIN TEXTURIZATION

Robert E. Small, Voorhees; William M. Hildebolt, Mickelton, both of N.J., and Murray T. Hundt, Oakville, Canada, assignors to Campbell Soup Company, Camden, N.J.

Filed Oct. 31, 1977, Ser. No. 846,823
Int. Cl.[2] A23J *3/00*
U.S. Cl. 426—511 **16 Claims**



1. A method for producing a relatively dense texturized protein product with a unidirectional laminated surface structure comprising:

(a) mixing untextured protein material and water to form a protein dough, said dough containing from about 60 to about 73% solids;

(b) advancing said dough to an extrusion die at a temperature below that at which texturization takes place;

(c) continuously extruding said dough in the form of a thin sheet of protein material through said extrusion die while simultaneously texturizing both surfaces of said thin sheet as it passes through said die by applying heat to both surfaces of said sheet from a source external the die walls, said external heat source supplying sufficient heat to texturize the protein at both surfaces of said sheet;

(d) passing said surface-texturized, extruded sheet in unbroken form from the die directly into a first confined treating zone while simultaneously introducing a heated gaseous stream into said first confined treating zone, and further texturizing said unbroken sheet by extended contact with said heated gaseous stream, said heated gaseous stream being at a pressure and temperature sufficient to partially texturize the protein in said surface-texturized unbroken sheet, where said unbroken extruded sheet is buoyed up by said gaseous stream such that it is conveyed over the die into the first confined treating zone;

(e) cutting said unbroken extruded sheet into segments as it reaches the end of said first confined treating zone;

(f) mechanically conveying said cut segments through a second confined treating zone communicating with said first confined treating zone, and further texturizing said segments by continued contact with said heated gaseous stream introduced into said first confined treating zone, said heated gaseous stream being at a pressure and temperature, as it flows through said second confined zone, sufficient to texturize the remaining untexturized protein in said segments;

(g) passing said protein segments through means for maintaining back pressure disposed at the discharge end of said second confined treating zone; and

(h) recovering the texturized protein segments.

11. The method of claim 1 wherein said gaseous stream is steam.

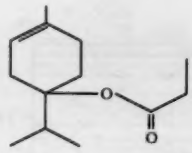
4,139,649

FLAVORING WITH A MIXTURE OF 4-TERPINENOL PROPIONATE AND 2-METHYL-3-FURANTHIOL

Cynthia J. Mussinan, Bricktown; Manfred H. Vock, Locust, and Arthur L. Liberman, Highlands, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 7, 1978, Ser. No. 884,348
Int. Cl.[2] A23L *1/231*
U.S. Cl. 426—533 **6 Claims**

1. A mixture of 4-terpinenol propionate having the structure:



and 2-methyl-3-furanthiol having the structure:

wherein the ratio of 4-terpinenol propionate: 2-methyl-3-furanthiol is 1:1 up to 1:2.

4,139,650

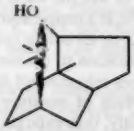
FLAVORING WITH A TRICYCLIC ALCOHOL

Kenneth K. Light, Long Branch, N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 485,554, Jul. 3, 1974, abandoned. This application May 5, 1976, Ser. No. 683,310
The portion of the term of this patent subsequent to Sep. 23, 1992, has been disclaimed.
Int. Cl.[2] A23L *1/226*
U.S. Cl. 426—538 **2 Claims**

1. A process for augmenting or enhancing the walnut flavor of a foodstuff comprising the step of adding thereto a walnut flavor augmenting or enhancing quantity of a compound having the structure:

2. A cola beverage comprising about 0.3 ppm of a compound having the structure:



4,139,651

METHOD OF REMOVING CITRUS-FRUIT-PULP-SEGMENT MEMBRANES

Tadashi Sekiguchi, Shizuoka, Japan, assignor to Toyoseikan Kaisha Ltd., Tokyo, Japan

Filed Jun. 8, 1977, Ser. No. 804,513
Claims priority, application Japan, Jun. 16, 1976, 51-69347
Int. Cl.[2] A23L 1/212
U.S. Cl. 426—616 8 Claims

1. A method of removing citrus-fruit pulp-segment membranes comprising the steps of heating pulp-segments of peeled citrus fruits, immersing the heated pulp-segments in a solution of a mixture of an alkali and a phosphate, and rinsing the solution-immersed pulp-segments, said alkali being in an amount sufficient to facilitate removal of the pulp-segment membranes but not react with the pulp-segments and said phosphate being present in a concentration of 0.1 to 3% by weight.

4,139,652

SOLVENT SYSTEM FOR ELECTROSTATIC SHADE BAND DEPOSITION PROCESS

Dennis S. Postupack, Natrona Heights, and David A. Allerton, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1977, Ser. No. 856,150
Int. Cl.[2] B05D 1/04, 5/06, 7/24
U.S. Cl. 427—14 9 Claims

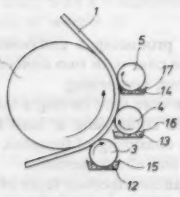
1. In a method for forming a colored portion on a transparent substrate by applying a dye solution to a surface of the substrate by electrostatic spray means, the improvement which comprises dissolving the dye components in a solvent comprising tetrahydrofuran and less than 50 percent by volume of N-lower alkyl-pyrrolidone.

4,139,653

METHOD FOR THE DEVELOPMENT OF ELECTROSTATIC CHARGE PATTERNS

Paul M. Cassiers, Mortsel, and Willy G. Verlinden, Edegem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 432,037, Jan. 9, 1974, abandoned. This application Oct. 14, 1976, Ser. No. 732,426
Claims priority, application United Kingdom, Jan. 10, 1973, 1411/73; Jan. 10, 1973, 1412/73
Int. Cl.[2] G03G 13/10
U.S. Cl. 427—16 5 Claims



1. A process of producing a liquid image, comprising the steps of:

bringing uniformly into at least close proximity with the surface of an insulating material carrying a detectable electrostatic charge pattern a developing liquid which is non-wettable with respect to said material surfaces in its uncharged state and selectively attracted into wetting contact with said surface in its charged state, whereby developing liquid is selectively applied to said charged surface area to develop said charge pattern, and

contacting the entirety of said insulating material surface while carrying the thus-applied liquid image thereon with a rotatable metal roller carrying on its periphery a pattern of capillary grooves substantially perpendicular to the roller axis and separated by lands or crests, said grooves absorbing therein by capillary forces liquid brought into contact therewith, said grooves being substantially empty of liquid when contacted with said material surface and absorbing excess developing liquid from said developed charge pattern into the empty space of said grooves by capillary forces.

4,139,654

MEDALLION-LIKE ARTICLES, LAMP LENSES AND METHOD FOR THEIR MANUFACTURE

Robert W. Reed, Heath, Ohio, assignor to Murfin Incorporated, Columbus, Ohio

Continuation of Ser. No. 599,862, Jul. 28, 1975, abandoned. This application Aug. 23, 1977, Ser. No. 827,433
Int. Cl.[2] B05D 3/06, 5/06
U.S. Cl. 427—44 4 Claims

1. A method for manufacturing a medallion-like article of manufacture including a lens cap bonded to an indicia-bearing substrate, the method comprising, in order, the steps of:

(a) supporting an indicia-bearing substrate which is wettable by an uncured, liquid, radiation-curable polymer in a generally horizontal orientation with its indicia facing upwardly;

(b) depositing an uncured, liquid polymer, which is curable by radiation other than radiant heat, only on the upwardly facing indicia-bearing face of said substrate in sufficient quantity to flow to the effective edges of said substrate and form a convex upper surface by means of the surface tension of said polymer, and

(c) irradiating said polymer with radiation other than radiant heat to effect the cure of said polymer.

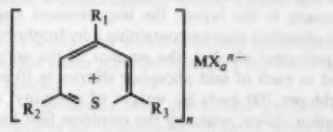
4,139,655

PHOTOCURABLE EPOXY COMPOSITIONS CONTAINING THIOPYRYLIUM SALTS

Jung-Tsien Tsao, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 9, 1978, Ser. No. 904,156
Int. Cl.[2] C08F 2/46, 4/00
U.S. Cl. 427—44 12 Claims

1. A photocurable composition comprising an epoxy resin polymerizable to a higher molecular weight and 0.1 to 10% by weight of said epoxy resin of a photodecomposable thiopyrylium salt of the formula:



where R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, alkyl containing 1 to 10 carbon atoms, cycloalkyl containing 5 to 12 carbon atoms, aryl containing 6 to 12 carbon atoms and substituted derivatives thereof, M is a metal or metalloid, X is a halogen radical, a is

a whole number equal to 1 to 10 and n is a whole number equal to 1 to 3.

4,139,656

PRINTING AND COATING METHOD

Orin S. Shutie, Greenford, and Leonard A. Jenkins, Newbury, both of England, assignors to Metal Box Limited, Reading, England

Division of Ser. No. 704,789, Jul. 13, 1976, Pat. No. 4,066,038. This application Oct. 25, 1977, Ser. No. 845,219

Claims priority, application United Kingdom, Jul. 23, 1975, 30728/75

Int. Cl.[2] B05C *1/02*; B05D *1/40, 1/28, 1/36*

U.S. Cl. 427—47 11 Claims

1. A method of sequentially applying first and second coatings to a hollow article, said method comprising the steps of providing a pivotally mounted arm carrying a mandrel for receiving the intended hollow article; providing an at rest position and a first coating position for said arm and mandrel, and a second coating position intermediate said first coating position and said at rest position; applying an article to be coated to said mandrel at the at rest position while said mandrel is in said at rest position; pivoting the article in a first direction to said first coating position and applying a first coating to the article; pivoting the article in a reverse direction towards said at rest position and stopping at said second coating position; applying a second coating to the article; and then pivoting the article in said reverse direction to said at rest position.

4,139,657

PROCESS FOR PRODUCING COLOR TELEVISION PICTURE TUBE

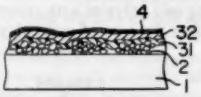
Naomitsu Watanabe, Mobara, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 23, 1977, Ser. No. 771,243

Claims priority, application Japan, May 10, 1976, 51-52213

Int. Cl.[2] B05D *5/06*; H01J *31/20, 29/22*

U.S. Cl. 427—68 5 Claims



1. In a process for producing a color television picture tube which comprises at least the step of coating phosphor slurries onto the inner surface of a panel to form a phosphor layer, the step of applying a first aqueous emulsion film containing an acrylic resin onto said phosphor layer and then drying the resulting coating film to form the first layer, then applying a second aqueous emulsion film containing an acrylic resin onto said first layer and then drying the resulting coating film to form the second layer, then the step of forming a metal film on the second layer, and then the step of volatilizing the organic substances in the layers, the improvement characterized by using phosphor slurries containing a hydrophobic acrylic resin and polyvinyl alcohol, the amount of the acrylic resin contained in each of said phosphor slurries is 10 to 300 parts by weight per 100 parts by weight of polyvinyl alcohol in the phosphor slurry, whereby the emulsion film forming the first layer is prevented from penetrating into the phosphor layer by the hydrophobic acrylic resin added to the phosphor slurry, using in the first aqueous emulsion film an acrylic resin having an elongation of 10% or more and using in the second aqueous emulsion film an acrylic resin having an elongation of less than 10%.

4,139,658

PROCESS FOR MANUFACTURING A RADIATION HARDENED OXIDE

Seymour H. Cohen, Berkeley Heights, and Joseph J. Fabula, Somerville, both of N.J., assignors to RCA Corp., New York, N.Y.

Filed Jun. 23, 1976, Ser. No. 698,924

Int. Cl.[2] B05D *5/12*

U.S. Cl. 427—93 14 Claims

1. A process for manufacturing oxides for semiconductor devices comprising the steps of:

(a) placing a silicon wafer into a furnace whose temperature is between 800° C. and 1200° C. and into which only oxygen gas, hydrogen gas and an anhydrous hydrogen halide gas are being injected there being an excess of oxygen gas with respect to hydrogen gas such that between 5% and 95% of the oxygen gas injected into the furnace does not combine with hydrogen gas;

(b) growing a pyrogenic oxide layer;

(c) turning off said hydrogen and hydrogen halide flows and growing a dry oxide layer;

(d) turning off said oxygen flow; and

(e) injecting an inert gas into said furnace while removing said wafer from said furnace.

4,139,659

THIN COMPOSITE WIRE SAW WITH SURFACE CUTTING CRYSTALS

Axel G. Rönnquist, Sollentuna; Erik T. Lindahl, Solna, and Nicolay S. Stoilov, Tyreso, all of Sweden, assignors to Lumalampan AB, Stockholm, Sweden

Division of Ser. No. 582,681, Jun. 2, 1975, Pat. No. 4,055,700, which is a continuation-in-part of Ser. No. 502,836, Sep. 3, 1974, abandoned. This application May 23, 1977, Ser. No. 799,839

Int. Cl.[2] C23C *11/08, 13/04, 11/10, 11/14*

U.S. Cl. 427—249 9 Claims

1. A process for producing a composite metal saw wire having a drawn wire core with two concentric layers formed integrally on said core, comprising

providing a drawn core wire having a thickness between 20 and 250 μm and comprising at least one metal selected from the group consisting of tungsten, molybdenum, tantalum, osmium and alloys thereof,

vapor depositing an intermediate layer of fine-grained material selected from the group consisting of titanium carbide, titanium nitride, zirconium nitride, and silicon carbide in a thickness of about 1 and 5 μm on said drawn wire core from a gaseous mixture consisting essentially of (i) at least one gaseous substance which on heating yields, respectively, (a) titanium and carbon which vapor deposit as titanium carbide, (b) titanium and nitrogen which vapor deposit as titanium nitride, (c) zirconium and nitrogen which vapor deposit as zirconium nitride, and (d) silicon and carbon which vapor deposit as silicon carbide, and (ii) a large dilution of an inert gas, and

then vapor depositing on said intermediate layer and outer layer having a thickness of between 1.5 and 10 μm and being at least as thick as said intermediate layer of hard cutting silicon carbide or boron crystals of substantially larger size than the crystals forming said intermediate

layer and having cutting edges projecting irregularly outwardly from said saw wire from a gaseous mixture consisting essentially of (i) at least one gaseous substance which on heating yields, respectively, (a) silicon and carbon which vapor deposit as silicon carbide, and (b) boron which vapor deposits as boron, and (ii) a large dilution of an inert gas, said intermediate layer being formed of a different material than said outer layer.

4,139,660

METHOD FOR INCREASING SOLID SURFACE TENSION

Wladimir Tur, Zurich, Switzerland, assignor to Bernhard Joos, Zurich, Switzerland

Continuation of Ser. No. 149,770, Jun. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 738,027, Jun. 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 381,477, Jul. 9, 1964, abandoned. This application May 24, 1976, Ser. No. 689,149

Claims priority, application Switzerland, Jul. 16, 1963, 8839/63

Int. Cl.² C23C *3/02*; B05D *3/00*

U.S. Cl. 427—353 **14 Claims**

1. A method for increasing the surface tension of a normally solid and normally non-wettable substrate which consists of contacting the surface of the substrate with an aqueous solution or aqueous dispersion containing at least one compound selected from the group consisting of stannous chloride, titanium trichloride, zirconium oxychloride and germanium dichloride, for up to 30 seconds, and removing the excess of the solution or dispersion by thoroughly rinsing the surface of the thus treated substrate with water.

4,139,661

DEWRINKLING AND PERMANENT CREASE REFORMING OF GARMENTS

Demetrius B. Anagnostis, 2099 SW. 67th Ave., West Miami, Fla. 33155, and Wilfred N. Lariviere, 3334 Garden Ave., Miami Beach, Fla. 33139

Filed Mar. 9, 1977, Ser. No. 776,092

Int. Cl.² D06M *1/18, 1/24*

U.S. Cl. 427—401 **1 Claim**

1. A method of removing wrinkles and repositioning permanent creases in permanent press fabrics which comprises the essential sequential steps of:

(a) impregnating the wrinkled and permanently creased portion of the fabric with a composition consisting essentially on the basis of weight of:
Stoddard solvent: 85%
petroleum jelly: 10%
deodorant: 5%

(b) subjecting the moistened fabric to steam without pressing the fabric thereby removing the wrinkles and permanent creases; and

(c) repositioning the permanent creases by appropriately folding the fabric to establish appropriate crease lines and subjecting the so established crease lines to ironing to effect repositioning of the permanent creases.

4,139,662

METHOD OF AND APPARATUS FOR METERING FAST-REACTING SATURANT ONTO SHEET MATERIAL

Rickie L. Sitler, Wrightsville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 14, 1977, Ser. No. 851,443

Int. Cl.² B05C *5/02*

U.S. Cl. 427—358 **18 Claims**

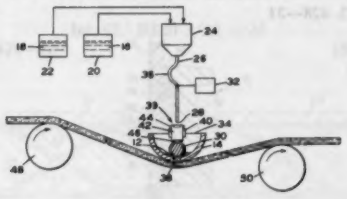
14. A method of metering a fast-reacting saturant onto moving sheet material comprising the steps of:

(a) providing sheet material to be saturated with a fast-reacting saturant,

(b) moving said material under a trough while being adjacent to the lower longitudinal edges of an opening through the bottom of said trough,

(c) supplying a fast-reacting saturant to a dispensing device,

(d) dispensing said saturant from said dispensing device into said trough, and



(e) metering said saturant in said trough by flowing said saturant between a rod having a circumferentially grooved surface and the upper longitudinal edges of the opening through the bottom of said trough and then flowing said saturant through the opening in the bottom of said trough onto the moving sheet material.

4,139,663

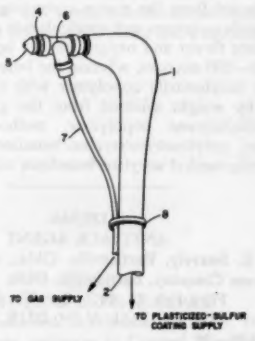
PROCESS FOR APPLYING A SMOOTH COATING OF PLASTICIZED SULFUR COMPOSITION

Robert W. Campbell, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 11, 1977, Ser. No. 823,808

Int. Cl.² B05D *1/02*

U.S. Cl. 427—422 **2 Claims**



1. A process for applying a smooth coating of a plasticized-sulfur composition without causing undue vapors and mist which comprises:

(1) conducting a continuous stream of molten plasticized-sulfur composition under pressure through a flexible conduit to a spray nozzle;

(2) injecting a substantially inert pressurized gas into said conduit containing said continuous stream of molten plasticized-sulfur composition proximate to said nozzle to form a mixture of said molten plasticized-sulfur composition and said gas in a flow rate ratio from about 0.02:1 to 1:1, the flow rate being measured in cubic feet per minute;

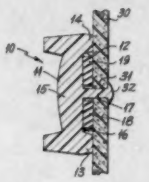
(3) spraying said mixture from said conduit through said nozzle onto the surface to be coated.

4,139,664

MECHANICAL SECUREMENT OF EXTRUSIONS

Brian A. Wenrick, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Mar. 21, 1977, Ser. No. 779,590
Int. Cl.[2] B32B *3/10, 27/40*
U.S. Cl. 428—31 4 Claims



1. An extrusion adapted to be mechanically secured to a slotted sheet-like substrate, said extrusion providing an elongated strip having a body portion including a rear face having at least one row of centrally positioned longitudinally spaced rearwardly projecting teeth, said rear face of said body portion having secured thereto at least one resilient tape positioned at one side of said teeth.

4,139,665

PACKAGING MATERIAL

Francisco Herrero, Hamburg, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 659,436, Feb. 19, 1976, abandoned.
This application Oct. 17, 1977, Ser. No. 842,768
Claims priority, application United Kingdom, Feb. 21, 1975, 7465/75
Int. Cl.[2] B65D *35/08;* B32B *27/08*
U.S. Cl. 428—35 5 Claims

1. A laminar packaging comprising a laminate consisting of an inner and an outer moisture and water vapor barrier layer, each barrier layer having a thickness of 50–200 microns and being selected from the group consisting of polypropylene, vinylchloride polymers and vinylchloride copolymers, and an intermediate flavor and oxygen barrier layer having a thickness of 10—100 microns, wherein the latter consists of a thermoplastic acrylonitrile copolymer with a nitrile content of 70–93% by weight selected from the group consisting of acrylonitrile/styrene copolymer, methacrylonitrile/styrene copolymer, acrylonitrile/styrene/butadiene copolymer, and acrylonitrile/methyl acrylate/butadiene copolymer.

4,139,666

ANTITACK AGENT

Kenneth E. Snavely, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 13, 1976, Ser. No. 657,823
Int. Cl.[2] F16L *11/04;* B32B *25/04*
U.S. Cl. 428—36 14 Claims

1. Rubber tubing useful for the handling of food items coated on the interior surfaces thereof with sufficient powdered milk as an antitack agent to prevent sticking of the interior wall of said tubing on self contact where the amount of said powdered milk coating is in the range of about 0.1 mg to about 10 kg per square meter of surface area and said rubber tubing is free of residual solids prior to coating the rubber tubing with the powdered milk.

4. Elastomeric-containing flexible articles of manufacture useful for handling and storage of food items which possess sufficient inherent stickiness or tackiness to cause sticking upon self contact coated with sufficient powdered milk as an antitack agent to prevent sticking of said articles upon contact where the amount of said powdered milk coating is in the range of about 0.1 mg to about 10 kg per square meter of surface area and said elastomeric-containing flexible article of manufacture is free of residual solids prior to coating the article with the powdered milk.

10. A method for preventing elastomeric flexible articles of manufacture made for handling and storage of food items from sticking upon self contact which comprises coating said articles on the surfaces thereof with sufficient powdered milk as an antitack agent to prevent said articles from sticking upon contact with said coating being in the range of about 0.1 mg to 10 kg of powdered milk per square meter of surface area and said article being free of residual solids prior to the coating of the articles with the powdered milk.

13. In a process for transporting milk through a rubber tubing free of residual solids including allowing milk to flow through said tubing and clamping said tubing thereby causing interior surfaces to come in contact whenever an interruption in the flow of milk is desired, the improvement comprising:

applying, prior to allowing milk to flow, a sufficient amount of powdered milk in the range from about 0.1 mg to about 10 kg per square meter of surface area onto the interior wall of the rubber tubing to prevent sticking of said interior wall to itself.

4,139,667

GEMSTONE CLOISONNE

Joan W. Blue, 1510 Crestview, Seal Beach, Calif. 90740

Filed Sep. 19, 1977, Ser. No. 834,801
Int. Cl.[2] B44F *1/06*
U.S. Cl. 428—38 10 Claims

1. A cloisonne mosaic depicting an artistic creation having discernible parts comprised of a laminar backing perforated at predetermined locations, a cloisonne framework mounted on said backing and delineating at least some boundaries of at least some of said discernible parts, and discrete pieces of mosaic inlay packed proximate to said cloisonne framework on one surface of said backing to form an artistic display, at least some of which pieces of mosaic inlay are articles of jewelry removably positioned relative to said cloisonne framework and have releasable fastening means extending through said backing for securing said articles of jewelry to said backing at said perforated locations in immobile fashion to contribute to said artistic display and are releasable to allow removal of said articles from said backing for personal adornment.

4,139,668

FILM-GRID COMPOSITE SUBSTRATE FOR ELECTRON MICROSCOPY

William J. Ward, III, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

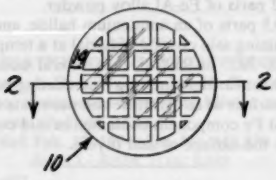
Filed Nov. 17, 1977, Ser. No. 852,243
Int. Cl.[2] B32B *9/04*
U.S. Cl. 428—138 13 Claims

1. A film-grid composite substrate for supporting specimens in electron microscopy comprising

(a) a specimen-support grid adapted for electron microscopy, and

(b) an ultrathin film comprising a mixture of at least one

organopolysiloxane-polycarbonate interpolymer and at least one polyphenylene oxide, regions of a major surface



of said film being in contiguous surface-to-surface contact with a major surface of the grid.

4,139,669

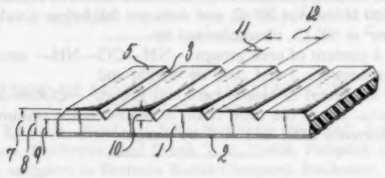
NON-KNIFING PLASTIC ADHESIVE TAPE FOR PACKAGING AND SEALING PURPOSE

Chow M. Chang, 261 Madison, Taipei, Taiwan, Taiwan (10016)

Continuation of Ser. No. 504,168, Sep. 9, 1974, abandoned, which is a continuation of Ser. No. 368,218, Jun. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 175,059, Aug. 26, 1971, abandoned. This application Nov. 9, 1977, Ser. No. 849,816

Int. Cl.[2] B32B *3/28, 3/30*

U.S. Cl. 428—167 **7 Claims**



1. An adhesive plastic tape for sealing and packaging purposes, comprising a flexible thermoplastic elongate plastic film having a front surface, a rear surface and two substantially straight and interrupted edges, an adhesive coated on the rear surface, the adhesive coated rear surface being substantially uninterrupted and planar and the front surface being an embossed surface defining a plurality of striations, the striations being disposed substantially parallel to each other and substantially transverse to the length of the tape, with the depth of the striations being from 18% to 50% of the thickness of the plastic film, the tape having an uninterrupted depth of the material of the plastic film adjacent the adhesive coated surface.

7. An adhesive plastic tape for sealing and packaging purposes, comprising a flexible, soft plastic film of a material selected from the group consisting of polyethylene, polyvinyl chloride, polyesters and polypropylene, having a front side surface and a rear side surface and two substantially straight and uninterrupted edges, an adhesive coated on said rear surface, said rear surface being substantially uninterrupted and substantially flat throughout the said rear surface; and said front surface being an embossed surface defining a plurality of striations disposed substantially parallel to each other and substantially transverse to the length of said tape, said tape being readily torn by hand in the transverse direction to give a substantially straight, non-curling and neatly torn edge, said tape having the following dimensions: total thickness, 0.05 to 0.3 mm; depth of striation or recessed portion, 0.015 to 0.125 mm; width of striation or lines, 0.06 to 0.5 mm; and pitch of striations or lines, 0.1 to 8 mm; and wherein the percentage of depth of striation to total thickness ranges from 18% to 50% with said tape having an uninterrupted depth of said material throughout the tape closest to said rear side surface whereby tensile strength in the length direction is at all locations sufficient for sealing and packaging purposes.

4,139,670

COMPOSITE PANEL MATERIAL WITH METAL SKELETON

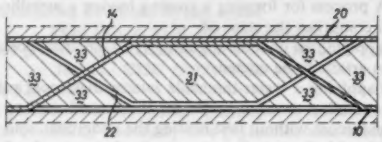
Hans-Beat Fehlmann, Walchwil, Switzerland, assignor to Loewe Anstalt, Switzerland

Filed Nov. 23, 1976, Ser. No. 744,263

Claims priority, application Switzerland, Nov. 24, 1975, 15173/75

Int. Cl.[2] B32B *3/30, 3/28*

U.S. Cl. 428—167 **15 Claims**



1. A composite panel material comprising a metal skeleton formed of two metal plates arranged in substantially parallel planes with an interspace between said plates, each of said plates being provided with at least one group of substantially isomorphous bridge-shaped elements protrudingly extending from said plate into said interspace between said two plates, each of said bridge-shaped elements having a longitudinal dimension and a lateral dimension, said group of bridge-shaped elements extending in a main direction substantially perpendicular to said longitudinal dimension of said bridge-shaped elements constituting said group, said bridge-shaped elements of said group being arranged with their longitudinal dimensions substantially parallel to each other, each two adjacent bridges of said group being separated by a distance that is at least as large as said lateral dimension, said two plates being arranged so that at least some of said bridge-shaped elements of said group on one of said two plates fit between and at least partially overlap with said bridge-shaped elements of said group on the other of said two plates to form an elongate cage-like enclosure between overlapping portions of the respective groups of bridge-shaped elements, said enclosure extending in said main direction; and a matrix material substantially fillng said interspace and bonding said plates into a substantially rigid coherent structure.

4,139,671

BOWLING LANE SURFACE

Peter B. Kelly, Coshocton, and Donald G. Pucci, West Lafayette, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,785

Int. Cl.[2] A63D *1/04;* **B32B** *29/06, 3/10*

U.S. Cl. 428—211 **19 Claims**

1. A decorative laminate for a bowling lane surface, said laminate comprising a fibrous resin-impregnated core, a resin-impregnated overlying fibrous print sheet and a fibrous, resin impregnated overlay, the resin in said overlay containing an effective amount of a lubricant material which imparts to said surface a desired lubricity or slip.

16. A bowling lane having a decorative laminate comprising a resin surface, said surface containing an internal lubricant material, the amount of which is varied along the lane as desired.

4,139,672

PROCESS FOR FORMING A COATING HAVING A METALLIC FINISH

Hiroshi Ozawa; Yoshinori Torii, both of Yokohama; Yasuo Okita, Ohiso; Nobuki Kobayashi, and Koji Ishikawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

Filed Dec. 14, 1976, Ser. No. 750,414
Claims priority, application Japan, Dec. 19, 1976, 51-150499
Int. Cl.[2] B32B *7/08;* B05D *3/02*
U.S. Cl. 428—323 10 Claims

1. A process for forming a coating having a metallic-finish, which comprises the steps of:

(I) applying an undercoat paint (A) by electrodeposition on an article to be coated;

(II) applying a water-thinnable intermediate coat paint (B) containing metallic scales on the coated surface of the undercoat without first heating the undercoat, said water-thinnable intermediate coat paint being in the form of either an aqueous solution of salt of the resin in water, an emulsion of fine particles of the resin solids dispersed in water, or a system in which an aqueous solution and the emulsion exist together;

(III) baking the undercoat and the intermediate coat;

(IV) coating a powder top coat paint (C) on the baked surface of the intermediate coat, and then

(V) baking the top coat, said intermediate coat paint (B) containing a solid resin component;

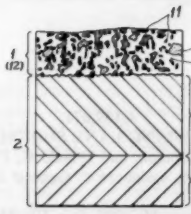
at least 60% by weight of the entire resin solids consisting of a (meth)acrylate ester copolymer containing at least 0.1 equivalent, per 1,000 g of the solids content of the copolymer, of carboxyl or carboxyl ion groups and having a number average molecular weight of at least 3,000, and said top coat paint (C) containing a (meth)acrylate ester copolymer containing a glycidyl or β-methylglycidyl group and a polycarboxylic acid.

4,139,673

SURFACE-COATED BLAST FURNACE TUYERE MADE OF COPPER OR COPPER ALLOY AND METHOD OF SURFACE-COATING THE SAME

Yutaka Ohmae, Shiga, Japan, assignor to Nihon Karoraizu Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1977, Ser. No. 825,085
Claims priority, application Japan, Feb. 22, 1977, 52-19034
Int. Cl.[2] B32B *15/20, 15/18*
U.S. Cl. 428—336 12 Claims



1. A copper or copper alloy tuyere having Fe and Al diffused into the upper surface thereof thereby forming a diffusion-penetration layer, and a sintered layer disposed on diffusion penetration layer, said sintered layer formed from (i) a dystectic point metallic oxide powder, (ii) an Fe-Al alloy powder, and (iii) a Cu-Fe-Al alloy.

11. A method of surface-coating a copper or a copper alloy made tuyere for a blast furnace, said method being characterized by:

(a) coating said tuyere with a coating material, said coating material being made of 25 to 35 parts of

a dystectic point metallic oxide powder selected from Al_2O_3, ZrO_2, TiO_2, Cr_2O_3, SiO_2, ThO_2, MgO,

2 to 5 parts of metallic Al powder,

60 to 72 parts of Fe-Al alloy powder,

0.3 to 0.5 parts of an ammonium halide; and

(b) maintaining said coating material at a temperature in the range of 700° to 950° C. for several hours in an inert atmosphere further sintering said coating material to said tuyere surface so as to diffuse and penetrate the Al component and Fe component contained in said coating material beneath the surface of said tuyere.

4,139,674

NOVEL TRANSPARENT POLYURETHANE POLYUREAS FOR LAMINATION OF GLAZING MATERIALS

Hanns P. Müller, Leverkusen; Wolfgang Oberkirch, Cologne; Kuno Wagner, and Bernd Quiring, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1977, Ser. No. 833,311
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644434
Int. Cl.[2] B32B *27/40;* C08G *18/32;* C09J *5/04;* B29D *7/02*
U.S. Cl. 428—339 7 Claims

1. Polyurethane polyureas with a predominantly linear molecular structure exclusively containing aliphatically or cycloaliphatically bound urethane and urea segments and having a shear modulus G' (DIN 53 445) which amounts to between 2 and 140 N/mm^2 at 20° C. and does not fall below a value of 1 N/mm^2 at 60° C., characterized by

(a) a content of urea groups —NH—CO—NH— amounting to between 1 and 20% by weight and

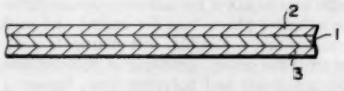
(b) a content of lateral carboxyl groups —COOH directly attached to the main chain of the molecule amounting to between 0.001 and 10% by weight.

4,139,675

RECORDING PAPER WITH RESIN-CONTAINING RECORDING LAYER AND HEAT SENSITIVE ADHESION LAYER

Koichi Nagai; Ryuji Ishikawa; Koichi Imamura; Fumio Fujimura, and Youhei Shiokoshi, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1976, Ser. No. 673,875
Claims priority, application Japan, Apr. 8, 1975, 50/42618
Int. Cl.[2] B32B *27/00;* C09J *7/02*
U.S. Cl. 428—349 16 Claims



1. Recording paper comprising a resin-containing photoconductive or dielectric recording layer, an electrically conductive base layer, and a heat-sensitive cohesion and/or adhesion layer which develops a cohesive and/or adhesive property by heating, said recording paper being so laminated tht said recording layer lies on one surface of said base layer and that said heat-sensitive cohesion and/or adhesion layer lies on the other surface, said heat-sensitive cohesion and/or adhesion layer being tackified at a tackiness developing temperature which is lower by at least 10° C.than the melting temperature of a resin of said recording layer.

11. Recording paper wherein a polymethacrylate resin with titanium oxide mixed therein is applied on a front surface of electrically conductive base paper which is impregnated with an quarternary ammonium salt series conductive polymer; a solution is applied on a back surface of said base paper, said solution being prepared by adding a synthetic terpene resin to

a polyvinyl acetate — polyacrylate ester copolymer emulsion and then adding a quaternary ammonium salt series conductive polymer as diluted in alcohol to the resultant emulsion.

4,139,676

CONSOLIDATION OF AGGREGATE MATERIAL

Edward W. Janssen, Roseville, and Jon H. Simpson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 12, 1974, Ser. No. 441,876
Int. Cl.[2] B32B *5/16, 9/00*
U.S. Cl. 428—402 12 Claims

1. A method for consolidating superficial aggregate material comprising the steps of:

(a) contacting the top surface of said aggregate with a fluid agent consisting essentially of a water-insoluble, moisture-curable NCO-terminated prepolymer and an organic solvent therefor, said prepolymer, after curing in the presence of moisture, having a tear strength of at least 75 pounds per lineal inch, an elongation of at least 100%, a tensile strength of at least 400 psi at 25% elongation, a tensile strength of at least 500 psi at 50% elongation, an ultimate tensile strength of at least 1000 psi, a dry compression strength characteristic of at least 400 psi, and a wet compression strength characteristic of at least 50 psi, and

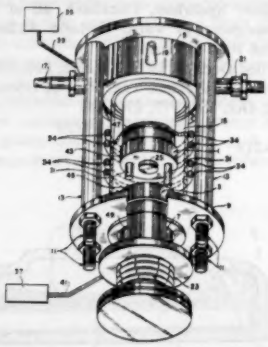
(b) curing said prepolymer in the presence of sufficient moisture to form a substantially nonfoamed polymer binding said aggregate together in a water-permeable mass.

4,139,677

METHOD OF MOLDING GLASS ELEMENTS AND ELEMENT MADE

Gerald E. Blair, Pittsford; John H. Shafer, Penfield; John J. Meyers, Rochester, and Frank T. J. Smith, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 609,328, Sep. 2, 1975, abandoned. This application Jan. 26, 1977, Ser. No. 762,898
Int. Cl.[2] C03B *11/08*
U.S. Cl. 428—409 24 Claims



1. A method of molding a finished optical surface having high surface quality and accuracy on vitreous material in an non-oxidizing atmosphere which comprises pressing heat-softened vitreous material against a specular molding surface formed from a material selected from the group consisting of silicon carbide and silicon nitride with sufficient force to conform the vitreous material to the molding surface.

18. A glass element having a finished optical surface of high surface quality and accuracy prepared by a method of molding in a non-oxidizing atmosphere comprising the steps of:

pressing a heat-softened glass against a molding surface formed from a material selected from the group consisting of silicon carbide and silicon nitride, the selected material being of sufficient thickness that the molding characteristics of the molding surface are exclusively attributable to the selected material;

cooling the glass and molding surface; and

removing the molded glass.

4,139,678

PIEZOELECTRIC CRYSTALLINE FILMS AND METHOD OF PREPARING THE SAME

Toshio Ogawa; Tasuku Mashio, both of Nagaokakyo, and Hiroshi Nishiyama, Mukou, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Feb. 2, 1978, Ser. No. 874,391
Claims priority, application Japan, Feb. 2, 1977, 52-11059
Int. Cl.[2] C23C *15/00;* C04B *35/00*
U.S. Cl. 428—432 4 Claims

1. A piezoelectric crystalline film disposed on a substrate, said film consisting essentially of a crystalline zinc oxide film with a hexagonal crystal structure and a c-axis substantially perpendicular to the substrate surface, characterized in that said crystalline zinc oxide film contains 0.01 to 20.0 atomic percent of bismuth.

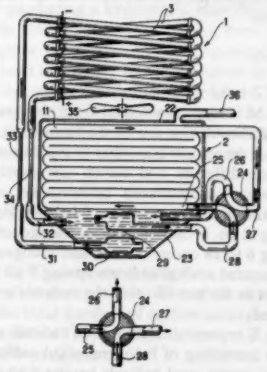
3. A method for making piezoelectric crystalline films comprising simultaneously sputtering zinc oxide and bismuth from a film material source onto a metal or glass substrate to form a crystalline zinc oxide film with a hexagonal crystal structure and a c-axis substantially perpendicular to the substrate surface containing 0.01 to 20.0 atomic percent of bismuth, wherein said sputtering is effected by radio-frequency sputtering in an atmosphere of argon or oxygen, or a mixture of argon and oxygen under a pressure of 1×10^{-1} to 1×10^{-3} Torr, and wherein said film material source consists essentially of ceramics of zinc oxide containing 0.01 to 20.0 atomic percent of bismuth, said substrate being positioned on an anode placed in parallel with a cathode on which said film material source is positioned, said film material source being supplied with an electric power of 2 to 8 w/cm^2.

4,139,679

RECHARGEABLE ELECTROCHEMICAL SYSTEM

Anthony J. Appleby, Sevres, and Jean Jacquelin, Limours, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Dec. 5, 1977, Ser. No. 857,838
Claims priority, application France, Dec. 3, 1976, 76 36513
Int. Cl.[2] H01M *8/04*
U.S. Cl. 429—21 12 Claims



1. Rechargeable electrochemical system comprising:

a battery including at least one air depolarized positive electrode, and at least one negative collector;

a tank;

an electrolyser including at least one positive electrode and one negative electrode;

an alkaline electrolyte having a suspension of negative active material containing 250 g to 350 g per liter of zinc equivalent; and

means for making the electrolyte flow either between the tank and the battery or between the electrolyser and the tank; and wherein

the total volume of the alkaline electrolyte lies between one and a half times and three times the interior volume of the electrolyser.

4,139,680

METHOD FOR PREVENTING DENDRITIC GROWTH IN SECONDARY CELLS

Carl R. Schlaikjer, Arlington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 610,518, Sep. 3, 1975, Pat. No. 4,020,240. This application Mar. 9, 1977, Ser. No. 775,829

Int. Cl.[2] H01M *10/36*

U.S. Cl. 429—50 **13 Claims**

1. A method for preventing dendrite formation in a rechargeable electrochemical cell having an anode comprising at least one metal which is subject to dendrite formation upon charging of said cell, a non-aqueous electrolyte solvent, and a cathode; comprising the steps of dissolving in said solvent an electrolyte salt having a metal cation and a clovoborate anion and charging said cell while in the discharged state whereby said electrolyte salt prevents said dendrite formation.

4,139,681

ELECTROCHEMICAL CELLS HAVING ALKALI METAL ANODES AND ELECTROLYTE SALT COMPLEX COMPOSITIONS INCLUDING HALOORGANOMETALLIC ALKALI METAL SALT COMPLEXES

Lawrence P. Klemann, Somerville; Gerald H. Newman, Westfield, and Eugene L. Stogryn, Edison, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 2, 1978, Ser. No. 882,635

Int. Cl.[2] H01M *6/18*

U.S. Cl. 429—191 **75 Claims**

1. In an electrochemical cell which contains an alkali metal anode, a cathode and a nonaqueous electrolyte, the improvement comprising:

using as said electrolyte electrolytically active alkali metal salt complexes including an electrolytically active amount of haloorganometallic alkali metal salt complex having the formula:

$$ZMR_nX_i$$

wherein Z is an alkali metal,

wherein M is a metal selected from the group consisting of Zn, Cd, B, Al, Ga, In, Tl, Sn (stannous), P and As,

wherein R represents n number of radicals which may be the same or different and which are inertly substituted or otherwise unsubstituted haloorganic radicals selected from the group consisting of halogenated alkyl radicals having 2 to 8 carbon atoms, halogenated aryl radicals having 6 to 18 carbon atoms, and halogenated alkaryl and halogenated aralkyl radicals having 7 to 50 carbon atoms, subject to the proviso that the radicals are not alpha halogenated,

wherein X represents i number of radicals selected from the group consisting of halogens, alkyl radicals having 1 to 8 carbon atoms, aryl radicals having 6 to 18 carbon atoms, and alkaryl and aralkyl radicals having 7 to 50 carbon atoms,

wherein n and i are numerical values which are zero or positive integers, whereby the sum of n plus i is equal to one plus the valence of the metal M, subject to the proviso that when n is zero at least one X is an organic radical and at least one X is a halogen.

4,139,682

CELLS HAVING CATHODES DERIVED FROM AMMONIUM-COPPER-MOLYBDENUM-CHALCOGEN COMPOUNDS

Allan J. Jacobson, Princeton, and M. Stanley Whittingham, Fanwood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 30, 1978, Ser. No. 910,478

Int. Cl.[2] H01M *4/58*

U.S. Cl. 429—218 **27 Claims**

1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more metals selected from the group consisting of the Periodic Table Group IA metals, Group IB metals, Group IIA metals and Group IIB metals;

(b) a cathode having as its cathode-active material one or more compounds selected from the group consisting of:

(i) those having the formula:

$$NH_4CuMoZ_y \quad (1)$$

wherein Z is a chalcogen selected from the group consisting of sulfur, selenium, sulfur-selenium mixtures, sulfur-oxygen mixtures and selenium-oxygen mixtures, and wherein y is a numerical value of about 4;

(ii) the thermal decomposition products of one or more compounds of subparagraph (i) resulting from the thermal decomposition thereof from about 50° C. to 350° C.; and,

(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between said anode and said cathode.

4,139,683

GALVANIC ELEMENT WITH NEGATIVE LIGHT METAL OR ZINC ELECTRODE

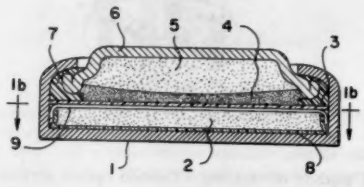
Hans Sauer, Idstein-Walsdorf; Hans-Martin Lippold, Glashütten, and Dieter Spahrbier, Fischbach, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,225

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708372; Oct. 15, 1977, 2746590

Int. Cl.[2] H01M *4/34*

U.S. Cl. 429—219 **12 Claims**



1. A galvanic element having a negative light metal or zinc electrode, an electrolyte, and a positive electrode positioned within a cell cup forming the positive current take-off and insulated from the positive electrode by an electrically non-conducting synthetic plastic layer covering the bottom and sidewall of the cup, the positive electrode being a chalcogenide of a metal having at least one higher and one lower valent state and which discharges in at least two steps, said chalcogenide selected from the group consisting of oxides of silver, bismuth and lead and sulfides of iron, cobalt and nickel, the element being characterized in that

the positive electrode is connected to the positive current take-off cell cup solely through an electrically conductive connector whose contact surface with the electrode consisting of the higher-valent chalcongenide is so small that, for discharge currents between 0.2 and 15 microamperes and particularly between 0.3 and 10 microamperes the current density at the contact surface is of the order of magnitude of 10^{-1} milliamperes/cm^2,

whereby even for current outputs of less than 15 microamperes the reduction of chalcogenide composition which determines the lower discharge potential into a chalcogen-poorest phase or into the metal itself takes place at the connector more rapidly than the oxidation of this metal or of this chalcogen-poorest phase into the higher-valent chalcogenide with which these are electrolytically conductively connected, and

whereby the discharge potential of the cell corresponding to the higher-valent metal chalcogenide is suppressed during operation.

4,139,684

METHOD FOR PREPARATION OF HYDROPHILIC POLYMERIC ION EXCHANGING GELS

Jiří Coupek; Otakar Mikes; Petr Strop, and Miroslava Krivakova, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Jan. 29, 1975, Ser. No. 545,019

Claims priority, application Czechoslovakia, Feb. 1, 1974, 703-74

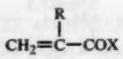
Int. Cl.² B01D *15/04, 15/08*

U.S. Cl. 521—27 **2 Claims**

1. An ion-exchange member having a hydrophilic character, macro or semi-macropores containing ionogenous groups and characterized by only slight swelling in aqueous solutions, said ion-exchange member being formed of a material produced by the ternary copolymerization in an aqueous dispersion medium in the presence of suspension stabilizer and inert component selected from the group consisting of hexanol, cyclohexanol, and mixtures of 88.8–98.5 wt. parts of cyclohexanol with 10–19.5 wt. parts of dodecylic alcohol, of

(a) hydrophilic monomers containing non-ionogenous groups, said hydrophilic monomers containing functional hydroxyl or amide groups selected from the group of compounds consisting of hydroxyalkyl acrylates, hydroxyalkyl methacrylates, polyglycol acrylates, polyglycol methacrylates, acrylamides, methacrylamides, and N-substituted acrylamides and methacrylamides

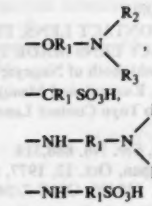
(b) monomers containing ionogenous groups and selected from the group consisting of acrylic acid, methacrylic acid and monomers represented by the formula



wherein:

R = H or CH_3, and

x is



R_1 is alkylene

R_2 and R_3 are hydrogen, alkyl, hydroxyalkyl or aminoalkyl radicals; and

(c) 30.0 to 39.1% by weight of crosslinking agents selected from the group consisting of alkylene diacrylates, alkylene dimethacrylates, oligoglycol and polyglycol diacrylates, oligoglycol and polyglycol dimethacrylates, alkylenebisacrylamides, alkylenebismethacrylates and divinylbenzene.

4,139,685

METHOD FOR THE PREPARATION OF POLYACRYLIMIDE AND POLYMETHACRYLIMIDE FOAMS

Guenter Schroeder, Ober-Ramstadt, Fed. Rep. of Germany, assignor to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,283

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726259

Int. Cl.² C08J *9/14*

U.S. Cl. 521—88 **5 Claims**

1. The method of making a foamed polyacrylimide or polymethacrylimide polymer which comprises free-radically polymerizing a mixture comprising

(A) a member selected from a first group consisting of acrylonitrile and methacrylonitrile and a member selected from a second group consisting of acrylic acid and methacrylic acid, the mol ratio of the members of said first group to the members of said second group being between 2:3 and 3:2, and

(B) up to 20 percent, by weight of (A), of other free radically-polymerizable monomers copolymerizable therewith, said mixture further comprising from 1 to 15 percent, by weight of (A) and (B), of a foaming agent which is a monovalent aliphatic alcohol having 3 to 8 carbon atoms, to form a solid polymer, and then heating said polymer at a temperature from 170° C. to 250° C. until a foam is formed.

4,139,686

PROCESS FOR MAKING HYDROPHILIC ELASTOMERIC POLYURETHANE RESIN WIPING CLOTHS AND THE RESULTANT PRODUCT

Gert Jabs, Schildgen, and Günther Loew, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 705,648, Jul. 15, 1976, Pat. No. 4,051,081, which is a continuation-in-part of Ser. No. 449,296, Mar. 8, 1974, abandoned. This application Jun. 6, 1977, Ser. No. 804,037

Int. Cl.² B29D *27/04*

U.S. Cl. 521—121 **2 Claims**

1. A process for producing a hydrophilic elastomer polyurethane wiping cloth, said polyurethane having been produced by reacting an organic polyisocyanate, an organic compound which contains at least two active hydrogen atoms in a mixture containing a blowing agent, in the presence of from 2 to about 10% by weight based on the weight of said organic compound, of an alkyl aryl sulphonic acid which is soluble in said organic compound wherein said alkyl aryl sulphonic acid has the formula

$$R_n—Ar—[SO_3H]_m$$

wherein

Ar represents a C_6–C_{14} arylene group,

R represents an alkyl group of 2 to 20 carbon atoms with a proviso that the total number of carbon atoms in all alkyl groups is from 4 to 40 carbon atoms,

n is an integer of 1 to 4, and

m is an integer of 1 to 3,

said process comprising forming a foamed polyurethane resin preform from the above reactants, cutting said foamed preform into webs, subjecting said webs to a temperature of from 150° to 250° C., passing said webs between two rollers heated to 100 to 300° C., the distance between said rollers being chosen so

that the foamed webs are permanently compressed to about 10 to 80% of their original thickness.

2. A hydrophilic, elastic polyurethane wiping cloth produced by the process of claim 1.

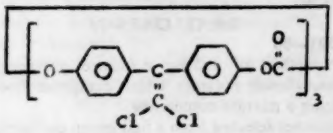
4,139,687

CYCLIC CARBONATE TRIMER OF 2,2-BIS(4-HYDROXYPHENYL)-1,1-DICHLOROETHYLENE

Keith N. Sannes, Mt. Vernon, Ind., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1977, Ser. No. 804,940
Int. Cl.[2] C08L *25/06, 67/00, 69/00*
U.S. Cl. 526—1 **2 Claims**

1. A cyclic trimer having the formula



4,139,688

PREPARATION OF INSOLUBLE POLYVINYLPYRROLIDONE

Kenneth W. Dixon, Sewickley, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,943
Int. Cl.[2] C08F *8/18, 8/20*
U.S. Cl. 526—41 **7 Claims**

1. A process for the preparation of insoluble homopolymers or copolymers of vinylpyrrolidone which comprises refluxing uncross-linked polyvinylpyrrolidone or uncross-linked copolymer of vinylpyrrolidone with an acid chloride selected from the group consisting of thionyl chloride, phosphorus trichloride and phosphorus pentachloride, in a liquid medium at a temperature between about 75° and about 140° C., to obtain a precipitate of cross-linked polyvinylpyrrolidone or of a cross-linked copolymer of vinylpyrrolidone.

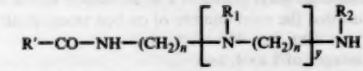
4,139,689

POLYMERIC BASIC AMIDES

Richard Hochreuter, Oberwil, and James R. Runyon, Therwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 596,286, Jul. 16, 1975, abandoned, which is a continuation of Ser. No. 333,485, Feb. 20, 1973, abandoned. This application Mar. 14, 1977, Ser. No. 777,469
Claims priority, application Switzerland, Feb. 24, 1972, 2637/72
Int. Cl.[2] C08F *8/32*
U.S. Cl. 526—52.4 **10 Claims**

1. A polymeric basic amide produced by reacting at a temperature above 100° C. (1) a polymer containing carboxyl groups and selected from the group consisting of oxidized polyethylene having a molecular weight from 700 to 7000 and an acid number from 10 to 120 and copolymers formed by copolymerizing ethylene and an unsaturated aliphatic carboxylic acid of 3 to 8 carbon atoms, which copolymers have a molecular weight of from 1000 to 6000, an acid number of 20 to 100 and a molecular proportion of acid component in the range 0.2 to 24% with (2) a polyamine of the formula,



in which R_1 and R_2 are each, independently, hydrogen or unsubstituted alkyl of 1 to 3 carbon atoms,

R' is a linear or branched unsubstituted alkyl or alkenyl radical of 11 to 21 carbon atoms,

n is an integer 2 or 3 and

y is an integer from 1 to 3.

4,139,690

PROCESS FOR PREPARING CONJUGATED DIENE POLYMERS

Yoshikazu Torigoe; Noboru Ohshima; Masaaki Watanabe, all of Yokkaichi, and Eitaro Okuya, Mie, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1977, Ser. No. 769,038
Claims priority, application Japan, Feb. 20, 1976, 51-17538
Int. Cl.[2] C08F *4/56*
U.S. Cl. 526—174 **14 Claims**

1. A process for preparing conjugated diene polymers by (1) polymerization of at least one monomer selected from the group consisting of conjugated diene compounds or (2) copolymerization of at least one monomer selected from the group consisting of conjugated diene compounds with at least one monomer selected from the group consisting of alkenyl aromatic compounds utilizing an organolithium initiator in a hydrocarbon solvent characterized in that the polymerization is carried out in the presence of

(a) at least one anionic surface active agent substituted with a group selected from:
—SO_3M or
—OSO_3M
wherein M is sodium or potassium, and

(b) a Lewis base selected from the group consisting of ethers or tertiary amines.

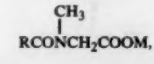
4,139,691

POLYMER DEPOSIT INHIBITED PROCESS FOR EMULSION POLYMERIZATION OF VINYL MONOMERS

Yoshio Nakai, and Masamitsu Tateyama, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1977, Ser. No. 863,259
Claims priority, application Japan, Dec. 27, 1976, 51-157747
Int. Cl.[2] C08F *2/10*
U.S. Cl. 526—195 **5 Claims**

1. A method for emulsion polymerization of a vinyl monomer which comprises emulsion polymerizing a vinyl monomer in an aqueous dispersion medium in which an alkali metal salt and/or an ammonium salt of at least one oxyacid selected from the group consisting of boric acid, aluminic acid, carbonic acid, hydrogencarbonic acid, silicic acid, nitric acid, nitrous acid, phosphoric acid, phosphorous acid, pyrophosphoric acid, metaphosphoric acid, sulfuric acid, and sulfurous acid is allowed to exist in an amount such that the strength of the oxygen acid is 0.01–1.0 g ion/kg H_2O, using as an emulsifier 0.1–10 parts by weight per 100 parts of the vinyl monomer of a salt of N-acylsarcosine represented by the general formula



wherein R is an alkyl or alkenyl group of 9–17 atoms and M is an alkali metal or ammonium.

4,139,692

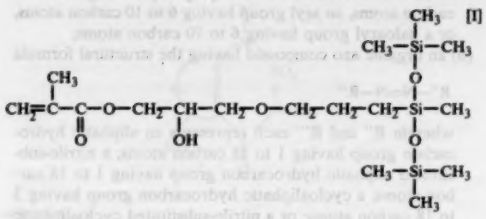
COPOLYMER FOR CONTACT LENS, ITS PREPARATION AND CONTACT LENS MADE THEREOF

Kyoichi Tanaka; Kouzou Takahashi, both of Nagoya; Mitsuhiro Kanada, Aichi; Yasuyuki Kato, Kasugai, and Masuji Ichihara, Aichi, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Nagoya, Japan

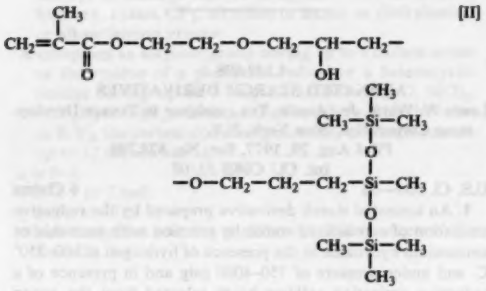
Filed Mar. 20, 1978, Ser. No. 888,314
Claims priority, application Japan, Oct. 12, 1977, 52-122680
Int. Cl.[2] C08F *220/28, 230/08;* **G02C** *7/04*
U.S. Cl. 526—218 **11 Claims**

1. A polymerization product of

(a) 30 to 80% of at least one monomer selected from the group consisting of methyldi(trimethylsiloxy)sylylpropylglycerol methacrylate having the following formula



and methyldi(trimethylsiloxy)sylylpropylglycerolethyl methacrylate having the following formula



(b) 5 to 30% of at least one hydrophilic monomer selected from the group consisting of ethylene glycol monomethacrylate, diethylene glycol monomethacrylate, triethylene glycol monomethacrylate, N-vinyl pyrrolidone and dimethyl acrylamide,

(c) 5 to 60% of at least one methacrylic acid alkyl ester monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate and cyclohexyl methacrylate, and

(d) 0.5 to 15% of at least one cross-linking agent having at least two copolymerizable functional groups selected from the group consisting of ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, allyl methacrylate, divinyl benzene, diallyl phthalate and trimethylolpropane trimethacrylate, said % of (a), (b), (c) and (d) being % by weight based on the total weight of (a), (b), (c) and (d).

4,139,693

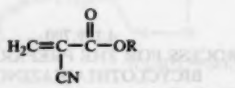
2-CYANOACRYLATE ADHESIVE COMPOSITIONS HAVING ENHANCED BOND STRENGTH

Jules E. Schoenberg, Scotch Plains, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Mar. 29, 1978, Ser. No. 891,375
Int. Cl.[2] C08F *120/34*
U.S. Cl. 526—297 **10 Claims**

1. An improved adhesive composition consisting essentially of a mixture of:

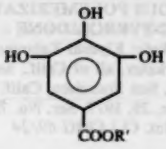
(A) a monomeric ester of 2-cyanoacrylic acid of the general formula:



wherein R is an alkyl or alkenyl group having from 1 to 16 carbon atoms, a cyclohexyl group, or a phenyl group;

(B) an anionic polymerization inhibitor; and

(C) from 1 to 30 mmoles per kg. of adhesive of an adhesion promoter of the general formula:



wherein R' is hydrogen or an alkyl, aryl or cycloalkyl group having from 1 to 10 carbon atoms.

4,139,694

COLORLESS ALLYL DIGLYCOL CARBONATE ARTICLES

Norman U. Laliberte, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 749,901, Dec. 13, 1976, Pat. No. 4,108,827. This application May 1, 1978, Ser. No. 902,014
Int. Cl.[2] C08G *63/52*
U.S. Cl. 528—280 **2 Claims**

1. A composition of matter for imparting a colorless appearance to optically clear allyl diglycol carbonate articles, said composition comprising:

about 40 parts of a member selected from the group consisting of maleic anhydride, maleic acid, copolymers of propylene glycol, ethylene glycol, or glycerin with maleic anhydride or maleic acid, and mixtures thereof; and

between about 0.5 and 1.5 parts of a mixture consisting essentially of 10 parts cobalt acetyl acetonate and between 0.4 and 1.2 parts copper acetyl acetonate.

4,139,695

HIGH MOLECULAR WEIGHT HIGH UNSATURATION C4-C10 ISOOLEFIN CONJUGATED DIOLEFIN COPOLYMERS AND MULTIPOLYMERS CONTAINING METHYLCYCLOPENTADIENE

Warren A. Thaler, Matawan; Donald J. Buckley, Plainfield, both of N.J., and Joseph P. Kennedy, Akron, Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 631,444, Nov. 13, 1975, Pat. No. 4,031,300, which is a continuation-in-part of Ser. No. 457,109, Apr. 1, 1974, Pat. No. 3,928,297, which is a continuation-in-part of Ser. No. 151,038, Jun. 8, 1971, Pat. No. 3,808,177. This application Apr. 14, 1977, Ser. No. 787,366
Int. Cl.[2] C08F *210/12*
U.S. Cl. 526—308 **13 Claims**

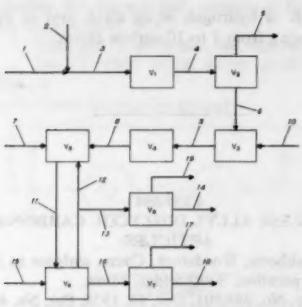
1. A substantially gel free polymer consisting essentially of a major portion of an isoolefin having about 4 to about 10 carbon atoms and about 5 to about 45 mole % of a conjugated diolefin being methylcyclopentadiene said polymer having a number average molecular weight of at least about 120,000.

11. A substantially gel free terpolymer consisting essentially of a major portion of an isoolefin having about 4 to about 10 carbon atoms and about 5 to about 45 mole % of a mixture of two dienes, one said diene being methylcyclopentadiene, the other said diene being selected from the group consisting of isoprene, piperylene or cyclopentadiene, said terpolymer having a number average molecular weight of at least about 120,000.

4,139,696
CONTINUOUS POLYMERIZATION OF 2-PYRROLIDONE

Byron E. Anshus, Orinda; Kiyoshi Katsumoto, El Cerrito, and Ira M. Serkes, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 29, 1977, Ser. No. 792,421
Int. Cl.[2] C08G *69/24*
U.S. Cl. 528—312 10 Claims



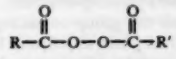
1. A continuous process for the polymerization of 2-pyrrolidone comprising
(a) contacting an aqueous alkaline hydroxide solution with excess 2-pyrrolidone, containing more than about 0.1 weight percent dimer, to form an aqueous alkaline mixture,
(b) maintaining said aqueous alkaline mixture at an elevated temperature in the range of about from 25–60° C. for a period of time necessary to reduce the dimer content of said mixture to about from 0.01 to 0.1 wt %, based on the weight of total pyrrolidone,
(c) rapidly dehydrating said aqueous alkaline mixture to reduce its water content to less than about 1000 ppm,
(d) contacting the dehydrated alkaline mixture with carbon dioxide to produce a carbonated alkaline mixture,
(e) maintaining said carbonated alkaline mixture under agitation in a polymerization zone at a polymerization temperature to form a product comprising particulate poly-2-pyrrolidone in said carbonated alkaline mixture,
(f) withdrawing said product from said polymerization zone, and
(g) washing said aqueous slurry with water to obtain a particulate poly-2-pyrrolidone product.

4,139,697
COLOR STABILIZATION OF VINYL CHLORIDE RESINS

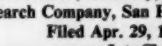
Henri Sidi, Paramus, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Apr. 6, 1977, Ser. No. 784,998
Int. Cl.[2] C08F *6/24*
U.S. Cl. 528—492 13 Claims

1. In the process for the removal of vinyl chloride from an aqueous slurry that contains 5% to 50% by weight of a vinyl chloride resin and 100 ppm to 15,000 ppm of vinyl chloride wherein the slurry is heated at a temperature between 70° C. and 100° C. until it contains less than 10 ppm of vinyl chloride, the improvement wherein discoloration of the vinyl chloride resin is inhibited by contacting the vinyl chloride resin in the slurry during the heat treatment with a monomer-miscible color stabilizer selected from the group consisting of
(a) organic peroxides having the structural formula



wherein R and R' each represents an alkyl group having 2 to 12 carbon atoms, a haloalkyl group having 2 to 12 carbon atoms, an aryl group having 6 to 10 carbon atoms, or a haloaryl group having 6 to 10 carbon atoms;
(b) an organic azo compound having the structural formula



wherein R'' and R''' each represents an aliphatic hydrocarbon group having 1 to 18 carbon atoms; a nitrile-substituted aliphatic hydrocarbon group having 1 to 18 carbon atoms; a cycloaliphatic hydrocarbon group having 3 to 18 carbon atoms; or a nitrile-substituted cycloaliphatic hydrocarbon group having 3 to 18 carbon atoms; and
(c) mixtures thereof.

4,139,698
AMINATED STARCH DERIVATIVES

Lewis W. Watts, Jr., Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,799
Int. Cl.[2] C08B *31/08*
U.S. Cl. 536—50 6 Claims

1. An aminated starch derivative prepared by the reductive amination of an oxidized starch by reaction with ammonia or ammonium hydroxide in the presence of hydrogen at 160–250° C. and under pressure of 750–4000 psig and in presence of a reductive amination catalyst being selected from the group consisting of copper, nickel, cobalt, chromium, aluminum, maganese, platinum, palladium, and rhodium, oxides of said metals and mixtures thereof.

4,139,699
WATER INSENSITIVE STARCH FIBERS AND A PROCESS FOR THE PRODUCTION THEREOF

Henry R. Hernandez, Somerville; Donald S. Greif, Bound Brook; Albert N. Barna, Plainfield, all of N.J., and Douglas S. Thornton, Himsdale, Mass., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 670,342, Mar. 25, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,669
Int. Cl.[2] C08B *31/00*
U.S. Cl. 536—109 16 Claims

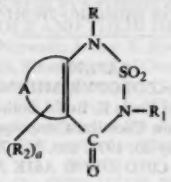
1. A process for the production of water-insensitive starch fibers comprising extruding a thread-like stream of a colloidal dispersion of a starch containing 55–100% by weight amylopectin at 5–40% by weight solids, into a moving coagulating bath comprising an aqueous solution of a coagulating salt selected from the group consisting of ammonium sulfate, ammonium sulfamate, monobasic ammonium phosphate, di-basic ammonium phosphate and mixtures thereof, said solution containing said coagulating salt in an amount at least sufficient to coagulate said starch.

4,139,700
PROCESS FOR THE PREPARATION OF BICYCLOTHIADIAZINONES

James A. Kloek, Overland, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 27, 1977, Ser. No. 819,636
Int. Cl.[2] C07D *285/16, 513/04*
U.S. Cl. 544—10 11 Claims

1. Process for preparing a compound of the formula



wherein

R, R_1 and $(R_2)_a$ independently represent hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkoxyalkyl, polyalkoxy, cycloalkyl, aromatic hydrocarbon, lower alkanoyl, alkoxycarboalkyl or analogs thereof substituted with halo, nitro, hydroxy, cyano, CF_3, alkylthio or mono- or dialkylamino or alkanolamino groups;

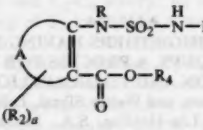
A comprises an alkylene group having up to 6 carbon atoms or the residue of a phenylene radical or a heterocyclic residue having up to 7 ring atoms including O, $S(O)_x$, $P(O)_yR_3$ or $N(R_3)z$ hetero moieties, where R_3 is the same as R-R_2, the carbon-containing members of which contain up to 12 carbon atoms;

a is 0–4;

x is 0, 1 or 2 and

y and z are 0 or 1;

which comprises reacting a sulfamoyl acid or ester of the formula



wherein A, R, R_1, R_2 and a have the meanings given above and R_4 is hydrogen or t-butyl, with an acid catalyst comprising a mixture of trifluoroacetic acid and trifluoroacetic anhydride at temperatures within the range of −78 to 150° C. to cyclize said ester.

4,139,701

7-AMINO-3-(SULFONIC ACID AND SULFAMOYL SUBSTITUTED TETRAZOLYTHIOMETHYL)CEPHALOSPORIN INTERMEDIATES

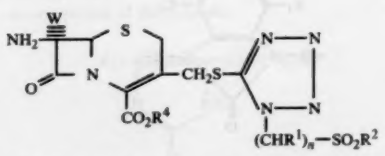
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 687,792, May 19, 1976, Pat. No. 4,048,311, which is a continuation-in-part of Ser. No. 647,394, Jan. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 559,609, Mar. 18, 1975, abandoned. This application May 10, 1977, Ser. No. 795,585

Int. Cl.² C07D *501/18*

U.S. Cl. 544—26 **12 Claims**

1. A compound of the formula:



is which:

W is hydrogen or methoxy;

each individual R^1 is hydrogen or lower alkyl;

n is one to ten;

R^2 is hydroxy, amino, lower alkylamino or di(lower)alkylamino, except that R^2 is not hydroxy when W is methoxy; and

R^4 is hydrogen or a protecting ester group.

4,139,702

PROCESS FOR PREPARING CEPHALOSPORINES

Renato Broggi, and Marco Falciani, both of Milan, Italy, assignors to DOBFAR S.p.A., Milan, Italy

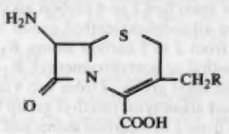
Filed Dec. 12, 1977, Ser. No. 859,526

Claims priority, application Italy, Dec. 16, 1976, 30482 A/76

Int. Cl.² C07D *501/06*

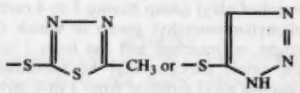
U.S. Cl. 544—27 **9 Claims**

1. A process for preparing cephalosporines which comprises treating a cephalosporanic derivative having the formula

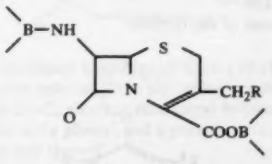


(I)

wherein R is —H, —$OCOCH_3$,



at room temperature with a polar anhydrous organic solvent selected from the group consisting of acetonitrile, tetrahydrofuran, methylene chloride, chloroform, adding a tertiary or secondary organic base selected from the group consisting of dialkylamines and trialkylamines, cooling the resulting mixture to a temperature of between −45° C. and −25° C. adding thereto a cyclic derivative of boron selected from the group consisting of ethylene chloroboronate, poppylene chloroborbornate and phenylene chlorobornate, in an amount of at least about 2 moles for each mole of the starting cephalosporanic derivative, increasing the temperature to about 0° C., thus forming an intermediate compound having the partial formula



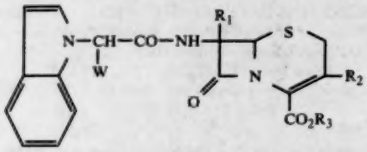
wherein R is as above defined, adding at a temperature of between −10° C. and 0° C. to carry out an acylation reaction an acylating agent selected from the group comprising D(−)-α-amino-α-phenylacetic acid chloride hydrochloride, D(−)-α-amino-(1,4-cyclohexadienyl) acetic chloride hydrochloride, D(−)-α-amino-parahydroxy-α-phenyl-acetic acid chloride hydrochloride, cyanoacetic acid chloride, 1H-tetrazolylacetic acid chloride, 4-(pyridylthio) acetic acid chloride hydrochloride, and 2-thienylacetic acid chloride, and finally adding at completion of the acylation reaction a mixture of water and hydrosoluble alcohol to provide an aqueous solution from which cephalosporine is isolated.

4,139,703
INDOLE CEPHALOSPORIN DERIVATIVES

Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness-Ziyona, both of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Dec. 8, 1977, Ser. No. 858,630
Int. Cl.[2] C07D *501/34, 501/22*
U.S. Cl. 544—28 7 Claims

1. A compound selected from the formula



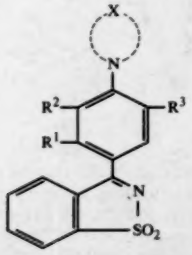
wherein W is hydrogen, a $-CO_2R_4$ group wherein R_4 is hydrogen, a straight or branched 1 to 4 carbon alkyl group, or a straight or branched alkanoyloxymethyl group in which the alkanoyl group has from 2 to 5 carbon atoms; R_1 is hydrogen or methoxy; R_2 is methyl or acetyloxymethyl; R_3 is hydrogen, a straight or branched alkyl group of from 1 to 4 carbon atoms, a straight or branched alkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms and is straight or branched, an alkanoylaminomethyl group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group having 1 to 4 carbon atoms; an alkoxycarbonylaminomethyl group in which the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group of from 1 to 4 carbon atoms, p-(alkanoyloxy)benzyl group in which the alkanoly moiety is straight or branched and has from 2 to 5 carbon atoms; or an aminoalkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 15 carbon atoms and the amino nitrogen may be mono- or di-substituted with a straight or branched alkyl group having from 1 to 4 carbon atoms; or pharmaceutically acceptable salts thereof.

4,139,704
CYCLIC AMINO CONTAINING BENZISOTHIAZOLES

Alan L. Borror, Lexington; James W. Foley, Andover, and John W. Lee, Jr., Harvard, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,022
Int. Cl.[2] C07D *417/10*
U.S. Cl. 544—135 13 Claims

1. A compound of the formula



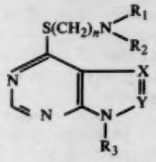
wherein R^1 and R^2 taken individually each are hydrogen, alkoxy having 1 to 4 carbon atoms or alkyl having 1 to 4 carbon atoms and taken together represent the carbon atoms necessary to complete a fused benzene ring, R^3 is hydrogen, alkoxy having 1 to 4 carbon atoms or alkyl having 1 to 4 carbon atoms and X represents the atoms necessary to complete piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino.

4,139,705
PYRAZOLOPYRIMIDINES

Joseph E. Dunbar, and Louis E. Begin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1977, Ser. No. 799,018
Int. Cl.[2] C07D *239/70*; A61K *31/505*
U.S. Cl. 544—280 4 Claims

1. A compound of the formula



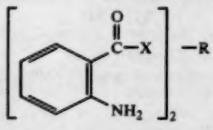
wherein *n* represents an integer of from 1 to 3; R_1 and R_2 represent a lower alkyl group of from 1 to about 4 carbon atoms; R_3 represents phenyl, or substituted phenyl having one or two halo substituents selected from the group consisting of chloro and bromo; and X represents a carbon atom with its respective hydrogen and Y represents nitrogen and further including the pharmaceutically-acceptable salts thereof.

4,139,706
NOVEL POLY(THIO)ETHERS HAVING TERMINAL AMINO GROUPS, A PROCESS FOR THEIR PRODUCTION AND THEIR APPLICATION

Oskar Schmidt, Kittsee, and Walter Sibral, Tulln, both of Austria, assignors to Lim-Holding, S.A., Luxemburg, Luxembourg

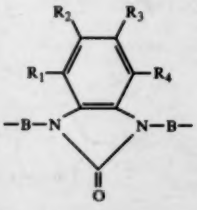
Filed Oct. 26, 1976, Ser. No. 735,282
Claims priority, application Austria, Oct. 27, 1975, 8150/75; Oct. 27, 1975, 8151/75
Int. Cl.[2] C07D *235/26*
U.S. Cl. 548—305 18 Claims

1. A compound having terminal amino groups, said compound being of the formula



(I)

wherein X is oxygen or sulfur and R stands for a group of the formula



(II)

wherein R_1 to R_4 represent hydrogen or halogen and B stands for a divalent polyloweralkylene ether group or a polyloweralkylene thioether group or mixtures thereof such as it is obtained by removal of the hydroxyl or mercapto groups from a polyloweralkylene ether diol or a polyloweralkylene thioether dithiol of a molecular weight of 100 to 15000.

4,139,707

INTERMEDIATES FOR SYNTHESIS OF TETRAMISOLE, LEVAMISOLE AND THEIR DERIVATIVES

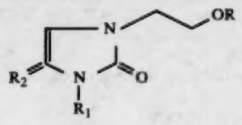
Sivaraman Raghu, Norwalk; Arthur K. Hoffmann, New Canaan, and Balwant Singh, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 739,924, Nov. 8, 1976, Pat. No. 4,090,025, which is a continuation-in-part of Ser. No. 680,311, Apr. 26, 1976, abandoned. This application Mar. 8, 1978, Ser. No. 884,674

Int. Cl.[2] C07D *233/70, 233/90*

U.S. Cl. 548—320 19 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, C_1-C_6 alkyl, halo C_1-C_6 alkyl, phenyl, phenyl substituted with up to three groups selected from the group consisting of C_1-C_6 alkyl, halo and C_1-C_6 alkoxy and a moiety of the formula COR_3, wherein R_3 is selected from the group consisting of hydrogen, C_1-C_6 alkyl, halo C_1-C_6 alkyl, C_1-C_6 alkoxy, phenyl phenyl, and phenyl or phenoxy substituted with up to four groups selected from the group consisting of C_1-C_6 alkyl, halo, trifluoromethyl and C_1-C_6 alkoxy; R_1 is selected from the group consisting of hydrogen and a moiety of the formula COR_4, wherein R_4 is selected from the group consisting of C_1-C_6 alkyl C_1-C_6 alkoxy, phenoxy, C_5-C_{10} cycloalkyl, phenyl, and phenyl or phenoxy substituted with up to four groups selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy halo and trifluoromethyl; and R_2 is selected from the group consisting of phenyl, phenyl substituted with up to two groups selected from the group consisting of C_1-C_6 alkyl C_1-C_6 alkoxy, halo and trifluoromethyl.

4,139,708

INTERMEDIATES AND PROCESSES USEFUL FOR PREPARING MEDICINAL AGENTS IMIDAZOLEMETHYLPHOSPHONIUM SALTS

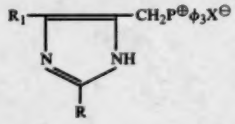
Clifford S. Labaw, Philadelphia; Robert L. Webb, West Chester, and George R. Wellman, Warminster, all of Pa., assignors to SK&F Lab Co., Carolina, P.R.

Division of Ser. No. 800,150, May 24, 1977, Pat. No. 4,104,472, which is a continuation-in-part of Ser. No. 767,083, Feb. 9, 1977, abandoned. This application Mar. 8, 1978, Ser. No. 884,657

Int. Cl.[2] C07F *9/65*

U.S. Cl. 548—342 4 Claims

1. A compound of the formula:



in which:

R is trichloromethyl or tribromomethyl;

R_1 is hydrogen, lower alkyl of 1–6 carbons or phenyl; and

$X^{\ominus}$ is chloride or bromide; or its acid addition salts.

4,139,709

1,2-DIPHENYL-3,5-DITRIFLUOROACETYLOXY-4-BUTYL-5-HYDROXY-3-PYRAZOLINE

Nicolae S. Bodor, and Kenneth B. Sloan, both of Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Division of Ser. No. 664,698, Mar. 8, 1976, Pat. No. 4,036,845, which is a division of Ser. No. 538,903, Jan. 6, 1975, Pat. No. 3,957,803. This application Mar. 14, 1977, Ser. No. 777,073

Int. Cl.[2] C07D *231/08*

U.S. Cl. 548—356 1 Claim

1. The intermediate compound:

1,2-Diphenyl-3,5-ditrifluoroacetyloxy-4-butyl-5-hydroxy-3-pyrazoline.

4,139,710

PREPARATION OF HEXAHYDROINDAZOLONES

Harold R. Drewes, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1977, Ser. No. 776,719

Int. Cl.[2] C07D *231/56*

U.S. Cl. 548—359 9 Claims

1. A process for the preparation of 2-aryl-1,2,4,5,6,7-hexahydro-3H-indazol-3-one which comprises contacting under reaction conditions in the presence of water, an aromatic hydrazine source with cyclohexanone 2-carboxamide and recovering the resulting 2-aryl-1,2,4,5,6,7-hexahydro-3H-indazol-3-one.

4,139,711

DIHYDROETHANOANTHRACENE DERIVATIVES

Masayuki Narisada, Ibaraki, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

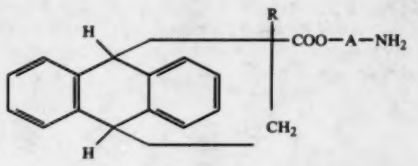
Division of Ser. No. 692,941, Jun. 4, 1976, Pat. No. 4,061,854. This application Feb. 10, 1977, Ser. No. 767,633

Claims priority, application Japan, Jun. 12, 1975, 50-71645; Jun. 12, 1975, 50-71646

Int. Cl.[2] C07C *93/20, 93/00*

U.S. Cl. 560—8 5 Claims

1. A member selected from the group consisting of a compound of the formula



wherein R represents hydrogen or C_1–C_4 alkyl, and A represents a member selected from the group consisting of C_2–C_4 alkylene and C_2–C_4 alkylene substituted by one or two C_1–C_4 alkyl moieties or by phenyl, and a pharmaceutically acceptable acid addition salt thereof.

4,139,712

ω-ARYL-13,14-DIDEHYDRO-INTER-OXA-PGA COMPOUNDS

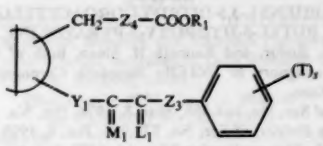
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 776,552, Mar. 7, 1977, which is a division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Apr. 28, 1978, Ser. No. 901,058

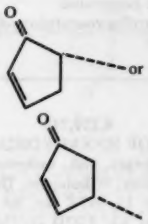
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 37 Claims

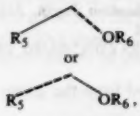
1. A prostaglandin analog of the formula:



wherein D is

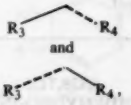


wherein Y_1 is —C≡C—;
wherein Z_4 is
(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or
(3) $-(CH_2)_3-O-(CH_2)_g-$,
wherein g is one, 2, or 3;
wherein Z_3 is oxa or methylene;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl,
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and Z_3 is methylene; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

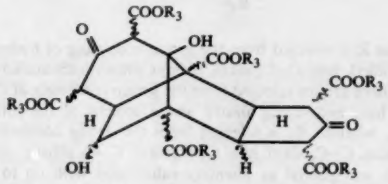
4,139,713

STEROIDAL INTERMEDIATES FROM THE CONDENSATION PRODUCT OF DIMETHYL-3-KETOGLUTARATE AND GLYOXAL

Ulrich Weiss, Bethesda, and Kenner C. Rice, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 690,361, May 26, 1976, Pat. No. 4,069,241. This application Jul. 19, 1977, Ser. No. 817,051
Int. Cl.[2] C07C *69/95*
U.S. Cl. 560—116 **1 Claim**

1. A hexacarbomethoxy compound of the formula



wherein R_3 is methyl.

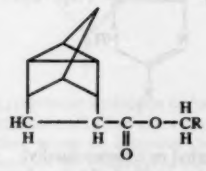
4,139,714

CATALYTIC CODIMERIZATION OF NORBORNADIENE WITH AN ACRYLIC ACID ESTER

Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Jul. 1, 1977, Ser. No. 812,206
The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.
Int. Cl.[2] C07C *69/74*
U.S. Cl. 560—116 **11 Claims**

1. Process for the catalytic codimerization of norbornadiene with an acrylic acid ester comprising:
(a) contacting norbornadiene and an acrylic acid ester, wherein the ester portion is RCH_2O— and R is an H or an alkyl containing one to ten carbon atoms, in the presence of a catalytic amount of a three-component homogeneous catalytic system consisting of nickel acetylacetonate, triphenylphosphine, and an alkyl aluminum chloride selected from the group consisting of diethylaluminum chloride, ethyl aluminum dichloride, ethyl aluminum sesquichloride;
(b) having the contacting occurring at a temperature within the range between from about −20° C. to about 100° C.; and
(c) continuing the contacting until a norbornadiene - acrylic acid ester codimer having the following structure



is prepared.

4,139,715

CATALYTIC CODIMERIZATION OF NORBORNADIENE WITH AN ACRYLIC ACID ESTER

Harry K. Myers, Jr., Aston, and Abraham Schneider, Overbrook Hills, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

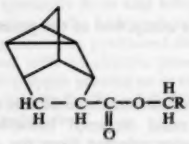
Filed Jul. 1, 1977, Ser. No. 812,207
Int. Cl.[2] C07C 69/74
U.S. Cl. 560—116 11 Claims

1. Process for the catalytic codimerization of norbornadiene with an acrylic acid ester comprising:

(a) contacting norbornadiene and an acrylic acid ester, wherein the ester portion is RCH_2O— and R is an H or an alkyl containing one to ten carbon atoms, in the presence of a catalytic amount of a three-component homogeneous catalytic system consisting of nickel acetylacetonate, 1,2-bisdiphenylphosphino ethane and an alkyl aluminum chloride selected from the group consisting of diethylaluminum chloride, ethyl aluminum dichloride, and ethyl aluminum sesquichloride;

(b) having the contacting occurring at a temperature within the range between from about −20° C. to about 100° C.; and

(c) continuing the contacting until a norbornadiene-acrylic acid ester codimer having the following structure



is prepared.

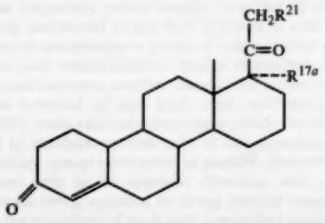
4,139,716

19-NOR-D-HOMOPREGNANES

Andor Fürst, Basel; Jürg A. W. Gutzwiller, Bettingen; Marcel Muller, Frenkendorf, all of Switzerland; Ulrich Kerb, and Rudolf Wiechert, both of Berlin, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 25, 1976, Ser. No. 670,211
Claims priority, application Switzerland, Apr. 9, 1975, 4499/75; Feb. 20, 1976, 2097/76
Int. Cl.[2] C07J 63/00
U.S. Cl. 560—257 5 Claims

1. A D-homosteroid of the formula



wherein R^{17a} is hydroxy, lower alkoxy or acyloxy and R^{21} is hydrogen, wherein said acyloxy is derived from a hydrocarbon monocarboxylic acid containing 1 to 10 carbon atoms.

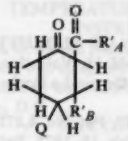
4,139,717

1,3-DICARBONYL COMPOUNDS

Seizi Kurozumi; Takeshi Toru; Toshio Tanaka; Shuzi Miura; Makiko Kobayashi, all of Hino, and Sachio Ishimoto, Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 554,097, Feb. 28, 1975, Pat. No. 4,009,196.
This application Jan. 4, 1977, Ser. No. 756,739
Claims priority, application Japan, Mar. 4, 1974, 49/24133
Int. Cl.[2] C07C 65/20, 69/95
U.S. Cl. 562—460 2 Claims

1. 2-Acyl-3-substituted cyclohexan-1-ones of the following formula



wherein Q is a hydrogen atom; R'_A is a monovalent organic group of the formula:

Z—COOR

wherein Z is a divalent saturated or unsaturated hydrocarbon residue containing 1 to 19 carbon atoms; and R is a hydrogen atom or a saturated or unsaturated hydrocarbon residue containing 1 to 8 carbon atoms; and R'_B is an alkyl group containing 2 to 20 carbon atoms.

4,139,718

POLYVINYL QUATERNARIES

Derek Redmore, Ballwin, and Frederick T. Welge, Affton, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 14, 1974, Ser. No. 442,317
Int. Cl.[2] C07C 85/02; A01N 9/20
U.S. Cl. 260—567.6 P 6 Claims

1. The process for preparing polyvinyl quaternary amines which comprises reacting an aqueous solution of a tertiary amine with ethylene dihalide in the mol ratio of about 2 to 1 at a temperature of at least about 100° C. for a time sufficient to produce a vinyl quaternary amine, the tertiary amine being of a structure such that under the conditions of the reaction it is capable of both adding to one end of the ethylene dihalide and causing dehydrohalogenation to yield a vinyl quaternary amine, and continuing the reaction so that the vinyl quaternary amine is further polymerized to form the polyvinyl quaternary, the amine being a dimethyl aliphatic hydrocarbon amine where the aliphatic hydrocarbon group has 6 to 30 carbon atoms.

4,139,719

PROCESS FOR THE PREPARATION OF UNSATURATED ACIDS FROM UNSATURATED ALDEHYDES

James F. White, Akron; Wilfrid G. Shaw, Lyndburst, and Michael D. Applequist, Mayfield Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 733,735, Oct. 19, 1976, Pat. No. 4,085,065.
This application Jan. 31, 1977, Ser. No. 764,128
Int. Cl.[2] C07C 51/32, 57/04
U.S. Cl. 562—535 20 Claims

1. In the process for the production of acrylic acid and methacrylic acid by the oxidation of acrolein and methacrolein respectively, with molecular oxygen in the vapor phase at a reaction temperature of about 200° C. to about 500° C. in the presence of an oxide catalyst, and optionally in the presence of steam, the improvement comprising using as the catalyst a catalyst of the formula

$$X_aY_bMo_{12}P_cAs_dO_x$$

wherein

X is at least one element selected from the group consisting of U, Ti, Nb, Re, Zn, and Ga;

Y is at least one element selected from the group consisting of Cu, a rare earth element, Ag, Ta, In, Th, Cd, Tl, NH_4, Cl, Ni, Al and Ge; and wherein

a is 0.001 to 10;

b is 0 to 10;

c is 0.01 to 5;

d is 0.01 to 5;

x is the number of oxygens required to satisfy the valence states of the other elements present.

4,139,720

PROCESS FOR THE PREPARATION OF ALDEHYDES

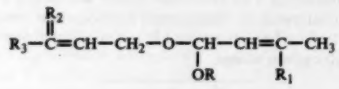
Willy Leimgruber, Montclair, and Donald H. Valentine, Jr., Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 755,695, Dec. 30, 1975, Pat. No. 4,073,811, which is a division of Ser. No. 442,991, Feb. 15, 1974, Pat. No. 4,016,212, which is a continuation-in-part of Ser. No. 340,496, Mar. 12, 1973, abandoned. This application Nov. 16, 1977, Ser. No. 851,997

Int. Cl.[2] C07C *43/30*

U.S. Cl. 568—596 **2 Claims**

1. The compound of the formula:



wherein R_1 and R_2 are lower alkyl; R_3 is hydrogen, lower alkyl or a linear or branched chain aliphatic hydrocarbon containing from 2 to 8 carbon atoms and from 1 to 2 double bonds; and —R is lower alkyl.

4,139,721

PROCESS FOR PREPARING DIPHENYL HALOETHYLENES

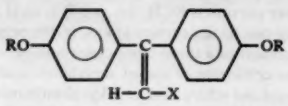
John R. Campbell, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 1, 1978, Ser. No. 901,515

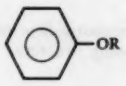
Int. Cl.[2] C07C *37/00, 41/00*

U.S. Cl. 568—641 **10 Claims**

1. The process for making a diphenyl haloethylene compound of the general formula



which comprises effecting reaction between an aryl compound of the general formula



with a haloethylene compound of the general formula

$$X_2C = CHX$$

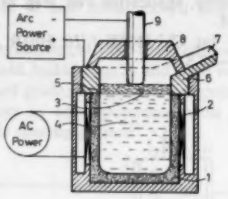
in the presence of trifluoromethanesulfonic acid and thereafter isolating the aforesaid diphenyl haloethylene compound, where R is a member selected from the class consisting of hydrogen and the methyl radical, and X is a member selected from the class consisting of chlorine and bromine.

4,139,722

ELECTRIC INDUCTION HEATING FURNACE

Gösta Karlsson, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 30, 1977, Ser. No. 811,878
Claims priority, application Sweden, Jul. 5, 1976, 7607666
Int. Cl.[2] H05B *11/00*
U.S. Cl. 13—4 1 Claim



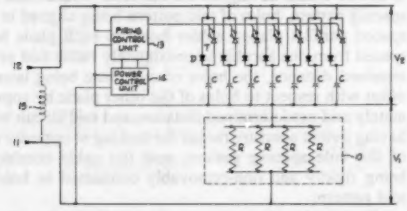
1. An electric induction furnace for heating a melt having a melt treatment slag floating thereon, said furnace comprising a crucible having a lower portion for containing the melt and surrounded by an induction coil that is reduced in height relative to said lower portion so that the coil's top is below the melt's level to avoid substantial disturbances there interfering with treatment of the melt by the slag floating thereon, said crucible having an internally electrically conductive upper portion extending upwardly from said lower portion for containing the slag floating on the melt's substantially undisturbed level, and an arcing electrode positioned above the upper slag level and connected with an electric power source via said internally conductive upper portion so as to form an arc heating the slag to maintain its fluidity while floating on the melt's substantially undisturbed level.

4,139,723

POWER CONTROL UNIT FOR A SINGLE PHASE LOAD WITH SLIGHTLY CHANGING IMPEDANCES

George Havas, Youngstown, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Apr. 21, 1977, Ser. No. 789,499
Int. Cl.[2] H05B *1/02, 5/04*
U.S. Cl. 13—26 4 Claims



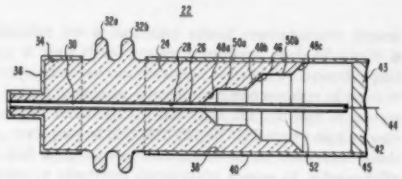
1. Power control means for a single-phase load whose impedance changes slightly over a work cycle for operation from a normal line frequency power supply, one line of said power supply being connected to the first terminal of said load, said power control comprising a group of sets of series connected capacitance and semiconductor means connected in parallel and interposed between another line of said power supply and the second terminal of said load, each said semiconductor means within each said set comprising diode rectifier means connected to conduct current only in one direction and controlled rectifier means connected in parallel therewith to conduct current only in an opposite direction, said controlled rectifier means being actuated by firing control means adapted to control the transition of each such controlled rectifier means form the non-conducting to the conducting state, the conduction of said controlled rectifier means within each selected set when required being initiated substantially at the instant when the voltage across said set attains its maximum value of like polarity as that of the voltage across the capacitance of said set prior to initiation of conduction and wherein conduction of said set is maintained continuously thereafter to produce a transient-free and harmonic-free alternating current in said set until deenergized, the number and size of sets conducting within said group determining the total amount of capacitance effectively interposed between said other power supply line and said second load terminal, thereby controlling the voltage and power delivered to said load.

4,139,724

CERAMIC END SEAL DESIGN FOR HIGH TEMPERATURE HIGH VOLTAGE NUCLEAR INSTRUMENTATION CABLES

James D. Meiss, Berkeley, Calif., and Collins P. Cannon, Kennewick, Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 13, 1977, Ser. No. 841,775
Int. Cl.[2] H02G *15/22*
U.S. Cl. 174—19 8 Claims



1. A high voltage, high temperature coaxial end seal for use with hermetically sealed nuclear instrumentation cables and sensors which end seal comprises:

a tubular ceramic body with a central passage therethrough along the longitudinal axis of the ceramic body, with the ceramic surface defining the central passage having a metallized layer thereon, and the exterior tubular surface of the ceramic body also having a metallized layer thereon, and wherein a central conductor is hermetically sealed within the passage to the metallized surface of the ceramic body, and an outer tubular metal sheath is fitted about the ceramic body and hermetically sealed to the exterior metallized surface of the ceramic body, and wherein a metal end cap is disposed at one end of the tubular ceramic body, which end cap is hermetically sealed to the central conductor and to the ceramic body, and wherein the other end of the tubular ceramic body has a concave end surface relative to the cable end to which it is hermetically sealed.

4,139,725

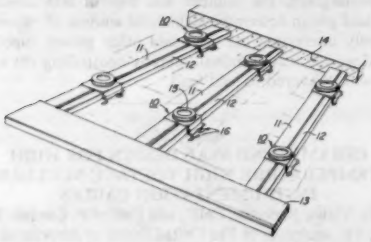
DUCT JUNCTION FITTING

Kenneth E. Guritz, 570 Emerald Harbor Rd., Sarasota, Fla. 33577, and Michael L. Guritz, 910 Riverside Dr. E., Bradenton, both of Fla. 33505

Filed Feb. 9, 1976, Ser. No. 656,718
Int. Cl.[2] H02G *3/12*
U.S. Cl. 174—49 4 Claims

1. A combination fitting comprising: a (rectangular) tubular body comprising first and second open ends, means dividing said body into first and second side-by-side compartments laterally isolated one from the other and dividing each of said ends into first and second openings; said first and second compartments respectively extending between said first openings and said second openings of said first and second open ends; and said dividing means comprising means to receive and hold an electrical receptacle substantially within the vertical and lateral dimensions of said dividing means; and said fitting fur-

ther comprises: support means for securing said body to a supporting base surface; and access means comprising a tubular section upwardly depending from said body and overlying an



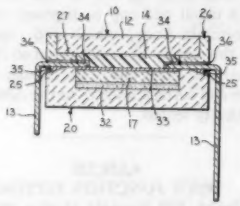
opening therein and providing access to said first and second compartments and to any electrical receptacle mounted on said dividing means, said access means adapted to receive and hold access closure means.

4,139,726

PACKAGED MICROCIRCUIT AND METHOD FOR ASSEMBLY THEREOF

Orville R. Penrod, Muskego, and Richard R. Fellows, Jr., Oak Creek, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 16, 1978, Ser. No. 869,538
Int. Cl.² H05K *5/06*
U.S. Cl. 174—52 FP **13 Claims**



1. A packaged microcircuit which comprises:

a housing of insulating material having at least one aperture extending from the interior of the housing to the outside, and a metallized surface formed in the aperture;

a microcircuit having a plurality of terminals disposed in the interior of the housing, at least one of the terminals being aligned with the aperture of the housing;

a lead extending from the outside into the aperture; and

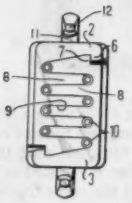
a plurality of solder connections, a first solder connection electrically connecting the lead to the terminal, and a second solder connection mechanically connecting the lead to the metallized surface of the housing to absorb stress applied to the lead and to insulate the microcircuit and its electrical connection to the lead from such stress.

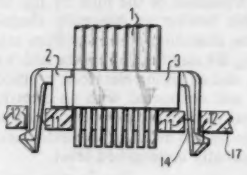
4,139,727

DEVICE FOR ATTACHING FLAT STRIP CABLES TO A PRINTED CIRCUIT BOARD

Siegfried Kuballa, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 687,899, May 19, 1976, abandoned.
This application Sep. 9, 1977, Ser. No. 831,758
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522755
Int. Cl.² H05K *1/10*; H01R *13/58*
U.S. Cl. 174—68.5 **6 Claims**





1. A split clamping element connection system non-removably attaching flat strip cable which is soldered to a circuit board, comprising in combination:

a. a flat cable having a plurality of parallel conductors all lying in a common plane and spaced apart from one another by a predetermined distance, ends of said conductors having cable insulation removed therefrom;

b. a circuit board having an offset solder connection hole spacing pattern, holes of said pattern being aligned in two spaced parallel planes, solder holes in each plane being spaced from one another approximately twice said predetermined distance, the holes of one plane being laterally offset with respect to holes of the other plane by approximately said predetermined distance, and said circuit board having detent aperture means for locking at opposite ends of the hole spacing pattern, said flat cable conductors being rigidly and non-removably connected in holes of said pattern;

c. a split clamping element means for mechanically relieving solder connections in said connection holes and aligning ends of the cable conductors in said hole pattern for non-removable rigid solder connections, said clamping element having a cable insertion end face and a circuit board end face having two rake-like components assembled in an interlocking orientation, each rake-like component being symmetrical with respect to the other and having

i. a plurality of teeth and a plurality of corresponding voids formed between said teeth;

ii. guide passage means for said flat cable conductors being formed between ends of each of the teeth at the circuit board end face and the cable insertion end face, the guide passage means in a first zone between the circuit board end face and an intermediate plane being substantially perpendicular to said circuit board end face, and in a second zone between the intermediate plane and the cable insertion end face the guide passage means being

formed in a straight line and at an acute angle with respect to the guide passage means in the first zone;

iii. a locking barb projecting from an end tooth at one lateral side of the rake-like component and a complementary barb receiving indentation at an opposite lateral side of the rake-like component;

iv. a detent locking arm means at one of said lateral sides received in one of said circuit board detent aperture means; and

d. the assembled symmetrical rake-like components being interlocked by said locking barbs and barb receiving indentations and said guide passage means aligning said ends of the conductors in correspondence with the circuit board solder hole spacing pattern.

4,139,728

SIGNAL PROCESSING CIRCUIT

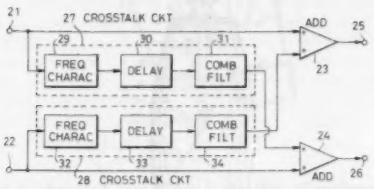
Yutaka Haramoto, Zama; Yasuhiko Fujii, Yokohama, and Masami Yamazaki, Zama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

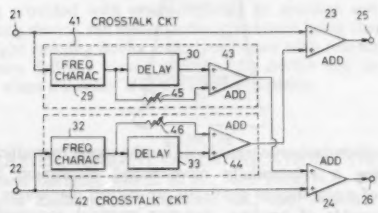
Filed Apr. 11, 1977, Ser. No. 786,675

Claims priority, application Japan, Apr. 13, 1976, 51-41641

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 G **9 Claims**





1. A signal processing circuit comprising:

a first crosstalk circuit including a delay circuit of a delay time τ and imparting a specific transfer characteristic to a first input signal;

a second crosstalk circuit including a delay circuit of the delay time τ and imparting a specific transfer characteristic to a second input signal;

first addition means for adding the output signal of the first crosstalk circuit and the second input signal;

second addition means for adding the output of the second crosstalk circuit and the first input signal; and

means for deriving output binaural signals respectively from the first and second addition means,

said first and second crosstalk circuits further having, respectively, means for attenuating components of specific frequencies defined by $(2n-1)/2\tau$ (where n is a positive integer) of the signals passing through the crosstalk circuits.

4,139,729

SOUND REPRODUCTION SYSTEM WITH MATRIXING OF POWER AMPLIFIER OUTPUTS

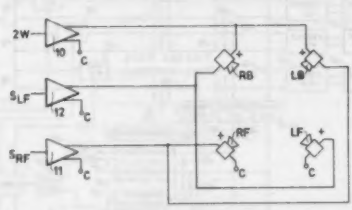
Michael A. Gerzon, Oxford, England, assignor to National Research Development Corporation, London, England

Filed Jun. 24, 1977, Ser. No. 809,634

Claims priority, application United Kingdom, Jul. 1, 1976, 27363/76

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **8 Claims**



1. A decoder for a surround sound reproduction system comprising at least three power amplifiers, each of which is arranged to produce an output signal between a respective pair of power output terminals, a predetermined number of pairs of decoder output terminals greater than the number of power amplifiers, each pair of decoder output terminals being associated with and adapted for connection to an associated loudspeaker, passive electrical connection means of substantially zero-impedance, for selectively connecting said decoder output terminals to other decoder output terminals, and said amplifier power output terminals to produce, during reproduction of surround sound, voltages across every group of three pairs of decoder output terminals which are linearly independent of one another.

4,139,730

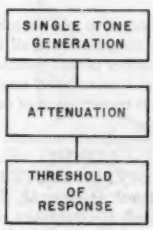
METHOD OF TESTING HUMAN AUDITORY RESPONSES

Barbara Franklin, 3580 Louis Rd., Palo Alto, Calif. 94303

Filed Aug. 10, 1977, Ser. No. 823,278

Int. Cl.² A61B *5/12*

U.S. Cl. 179—1 N **2 Claims**



1. Method of testing for auditory response, especially useful in testing infants and hard-to-test subjects comprising the steps of:

a. generating a speech pattern

b. filtering said speech pattern to produce a plurality of limited-frequency bands of said speech pattern so that each said band is centered at a unique selected frequency different from the frequencies at which the other bands are centered, each selected frequency being fixed, once selected, and each said band having approximately equal accoustic energy,

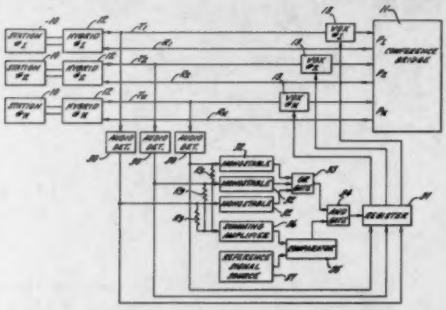
c. presenting said limited frequency bands, sequentially, at different intensity levels to a subject, and

d. identifying the threshhold level of hearing said speech pattern for each of of limited frequency bands.

4,139,731
TELEPHONE CONFERENCE SYSTEM WITH ACTIVE ANALOG CONFERENCE

Mike A. Hashemi, Bolingbrook, and Gregory P. Pucci, Westmont, both of Ill., assignors to Wescom, Inc., Downers Grove, Ill.

Filed Sep. 12, 1977, Ser. No. 832,788
Int. Cl.[2] H04M 3/56
U.S. Cl. 179—1 CN 9 Claims



1. A telephone conference system comprising

a telephone conference bridge for coupling multiple conference ports, said bridge comprising

means for summing incoming signals from all the conference ports and supplying the summed signals to all the conference ports, and

a plurality of differential amplifiers each of which is connected to one of the conference ports and differentially receives (1) incoming signals at the corresponding conference port and (2) the output of said summing means so as to cancel from the output of said summing means any signal received by said summing means from said corresponding conference port, whereby each differential amplifier passes only that portion of the output of said summing means that is received from conference ports other than the particular conference port to which that differential amplifier is connected.

a plurality of voice-actuated switches each of which is connected to one of said conference ports for controlling the transmission of incoming audio signals to the respective ports, and

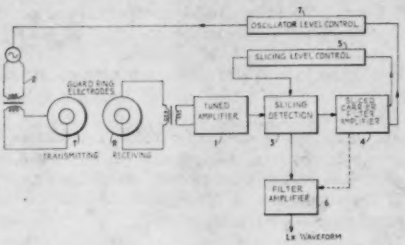
limiting means connected to said switches and responsive to the audio signals transmitted to all the conference ports for limiting the number of said switches that can be closed at the same time to a preselected maximum, while permitting the continuous transmission of outgoing audio signals from all said ports.

4,139,732
APPARATUS FOR SPEECH PATTERN DERIVATION

Adrian J. Fourcin, Hemel Hempstead, England, assignor to Laryngograph Limited, Hertfordshire, England

Continuation-in-part of Ser. No. 650,628, Jan. 20, 1976, abandoned. This application Jan. 4, 1978, Ser. No. 866,843
Claims priority, application United Kingdom, Jan. 24, 1975, 3269/75
Int. Cl.[2] G10L 1/12; G09B 19/04
U.S. Cl. 179—1 AL 15 Claims

1. A laryngograph for the production of larynx closure signals, without interferingwith the speech of the speaker comprising a first low impedance circuit with a transmitting electrode and an oscillator for feeding a carrier voltage input signal thereto, a second low impedance circuit with a receiving electrode for receiving a larynx-modulated carrier current output signal, said transmitting and receiving electrodes adapted for positioning in firm and continuous skin surface contact opposed from each other on the neck of a speaker, means on said electrodes for reducing the travel of electric current across the surface of the skin on the neck, means for detecting the larynx closure signal from said received carrier current, and means, connected to said detecting means, for

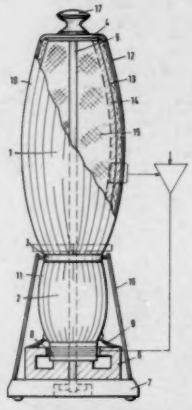


producing signals representative of the associated speech patterns.

4,139,733
ELECTRO ACOUSTIC TRANSDUCER WITH IMPROVED DIAPHRAGM

Werner Falkenberg, Berlin, Fed. Rep. of Germany, assignor to BM-Elektronik Meletzky KG, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,090
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1977, 2709374
Int. Cl.[2] H04R 7/14, 7/26, 9/02, 9/06
U.S. Cl. 179—1 F 7 Claims



1. An electroacoustic transducer for the sound reproduction, comprising a substantially olive-shaped diaphragm body formed of a plurality of convexly pre-curved diaphragm segments capable of bending, damping material accomodated within the diaphragm body, at least one oscillation generator provided at one end of the diaphragm body and having its moving coil connected to the diaphragm body, and means for rigidly connecting the other end of the diaphragm body to the housing of the oscillation generator, characterized in that the individual segments (10, 11) of the diaphragm body are formed of at least two layers (12, 13, 14) of unequally hard materials, of which the outer layer (12) intended for radiating the sound is made of a hard material and the inner layer or layers (13, 14) are made of softer materials growing softer in the inward direction, that the individual multilayer diaphragm segments (10, 11) are connected to each other by resilient strips forming crimps (S), that in accordance with the frequency range they have to reproduce, the length and curvature of the individual multiplayer diaphragm segments (10, 11) are so dimensioned that the center of deflection of the diaphragm segments (10, 11) is located immediately adjacent the ends subjected to the axially directed oscillation forces of the diaphragm body (1, 2), whereby the location of the center of deflection is defined to

the effect that the deflections of the diaphragm segments (10, 11) on the periphery of the diaphragm body (1, 2) always exceed the axially directed amplitudes of the moving coil (8), and that the damping material (15) accomodated within and filling the diaphragm body (1, 2) biases the diaphragm segments (10, 11) in the radially outward direction.

4,139,734

PIVOTED LOUDSPEAKER ENCLOSURE WITH VISUAL INDICATOR OF OPTIMUM LISTENING POSITION

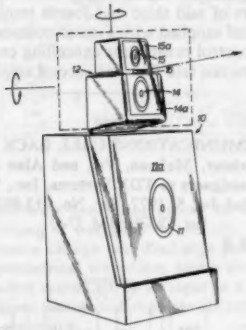
Lawrence R. Fincham, Maidstone, England, assignor to KEF Electronics Limited, Kent, England

Filed Feb. 28, 1978, Ser. No. 882,226

Claims priority, application United Kingdom, Apr. 13, 1977, 15347/77

Int. Cl.² H04R *1/20*

U.S. Cl. 179—1 E **5 Claims**



1. A loudspeaker comprising a plurality of enclosures each provided with a loudspeaker drive unit connected to an input, at least one of the enclosures being pivotally mounted with respect to another of the enclosures, said at least one enclosure being provided with means defining an aperture and a light emitting device, the means defining aperture being shaped and the light emitting device being positioned with respect to said aperture defining means whereby the device will be visible only when a listener is in the correct position.

4,139,735

CARRIER CURRENT COMMUNICATIONS SYSTEM

Bertrand Dorfman, 444 E. 82 St., New York, N.Y. 10028, and Victor Zadikow, 609 Larkfield Rd., East Northport, N.Y. 11731

Filed Jan. 7, 1977, Ser. No. 757,736

Int. Cl.² H04M *11/00*; H04H *1/08*

U.S. Cl. 179—2.5 R **12 Claims**

1. A carrier current communications system for buildings having an AC power distribution system, comprising:

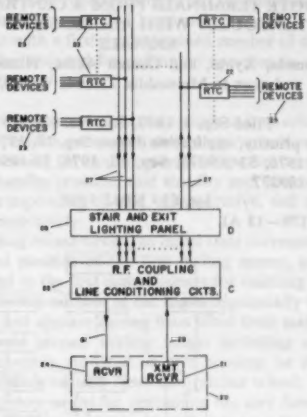
(a) a central station having means for receiving signals over the AC power distribution system on a first radio frequency and means for transmitting signals over the AC power distribution system on a second radio frequency,

(b) a plurality of remote stations having means for transmitting and receiving signals over the AC power distribution system on the first and second radio frequencies, respectively,

(c) first wire means for coupling the receiving means at the central station to the AC power distribution system, having significant reactive impedance,

(d) second wire means for coupling the transmitting means at the central station to the AC power distribution system, having significant reactive impedance,

(e) first capacitive tuning means for substantially tuning out the impedance of the first wire means at the receiving radio frequency, and



(f) second capacitive tuning means for substantially tuning out the impedance of the second wire means at the transmitting radio frequency.

4,139,736

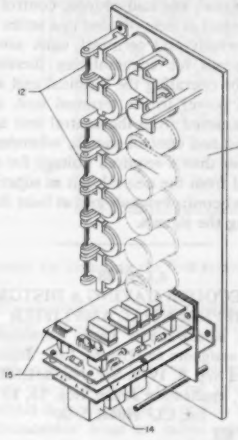
CENTRAL OFFICE COIN REPEATER MODIFICATION CIRCUIT

Thomas B. Norling, Lakeland, Fla., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 30, 1977, Ser. No. 866,119

Int. Cl.² H04M *17/02*

U.S. Cl. 179—6.3 R **14 Claims**



1. An improved coin check circuit for use with a prepay coin telephone repeater circuit comprising:

a holding bridge;

a pair of conductors, said holding bridge including an impedance device and a switch;

said holding bridge adapted to be connected across said conductors upon closure of said switch;

timing circuit means;

said switch responsive to said timing circuit means for closing said switch for a predetermined period;

said timing circuit means being initiated by dial pulses;

means for sensing a coin signal;

said means for sensing activated during said predetermined period.

4,139,737

TIME DIVISION MULTIPLEX TRANSMISSION SYSTEM IN WHICH ELECTRICAL POWER IS TRANSMITTED TO REMOTE TERMINALS FROM A CENTRAL UNIT SIMULTANEOUSLY WITH ADDRESS AND CONTROL SIGNALS

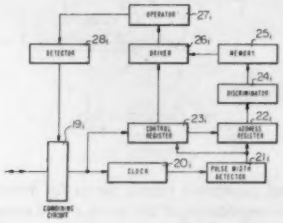
Isao Shimada, Kyoto, and Osamu Akiba, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 1, 1977, Ser. No. 829,885

Claims priority, application Japan, Sep. 10, 1976, 51-109274; Sep. 10, 1976, 51-109275; Sep. 10, 1976, 51-109276; Sep. 10, 1976, 51-109277

Int. Cl.[2] H04J *3/08*

U.S. Cl. 179—15 AL **7 Claims**



1. In a time division multiplex transmission system including a central unit and a plurality of terminal units, said central unit transmitting at least address signals and control signals respectively in a set sequentially to respective ones of said terminal units, each of said terminal units responding to a corresponding address signal which accompanies each control signal and receiving said control signal to be thereby controlled and transmitting to the central unit a response signal in accordance with the control signal, and said address, control and response signals being arranged as time-divided in a series time band; an arrangement in which said terminal units are respectively provided with means for accumulating therein an electric power required for operating the terminal unit and supplying said accumulated power to the terminal unit, said electrical power being transmitted from the central unit accompanying at least the address and control signals, wherein a direct current voltage higher than a required voltage for each terminal unit is transmitted from the central unit as superposed at least on the address and control signals and at least during the period of transmitting the signals.

4,139,738

MULTIPLEX DECODER HAVING A DISTORTION-FREE DIFFERENTIAL AMPLIFIER

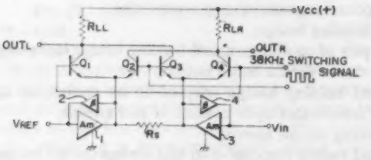
Masanori Ienaka, Kodaira, and Yasuo Kominami, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 8, 1977, Ser. No. 831,520

Claims priority, application Japan, Sep. 13, 1976, 51-108792

Int. Cl.[2] H04R *5/00*

U.S. Cl. 179—15 BT **5 Claims**



1. A multiplex decoder circuit comprising:

one pair of differential circuits for generating spearated left and right channel signals from a stereo composite signal, wherein one of said one pair of differential circuits comprises first and second transistors, the other of said one pair of differential amplifiers comprises third and fourth transistors, the emitters of said first and second transistors being connected to each other, the emitters of said third and fourth transistors being connected to each other, the bases of said first and fourth transistors and the bases of said third and fourth transistors being driven by channel switching signals in opposite-phase respectively, the collectors of said first and third transistors being respectively connected to a left channel load resistor, and the collectors of said second and fourth transistors being connected to a right channel load resistor;

a first amplifier having a negative feedback function, said first amplifier having an output terminal connected to said emitters of said first and second transistors, and an input terminal supplied with a reference signal;

a second amplifier having a negative feedback function, said second amplifier having an output terminal connected to said emitters of said third and fourth transistors, and an input terminal supplied with a stereo composite signal; and

a separation control resistor for cancelling crosstalk signals coupled between said first and second amplifiers.

4,139,739

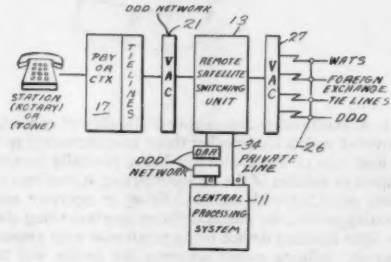
TELECOMMUNICATIONS CALL BACK SYSTEM

William von Meister, McLean, Va., and Alan Peyser, Silver Spring, Md., assignors to TDX Systems, Inc., Vienna, Va.

Filed Jul. 5, 1977, Ser. No. 812,891

Int. Cl.[2] H04M *3/42*

U.S. Cl. 179—18 B **14 Claims**



1. In a telephone communications lines control system for controllably connecting local subscriber telephone units to long distance lines including a plurality of remote switching means for connecting local subscriber telephone units to selected long distance telephone lines, a central control means positioned at a location remote from said switching means for controlling the connection of said local subscriber telephone units to said selected long distance telephone lines, and means for connecting said central control means to said plurality of remote switching means, said interconnecting means transmitting data signals between said remote switching means and said central control means, a call back system comprising means for monitoring the status of said telephone lines, and for generating a "line not available" signal when one of said subscriber units attempts to access a predetermined set of lines and none of said lines are available, and for generating a "line available" signal when one of said set of lines becomes available;

means responsive to said "line not available" signal for storing the telephone number of at least one subscriber unit attempting to access said "not available" lines in predetermined locations in a memory;

means responsive to said "line available" signal for scanning said memory locations in a predetermined sequence and calling the subscriber unit number in the memory location first in said sequence, and

means responsive to said "line available" signal for generat-

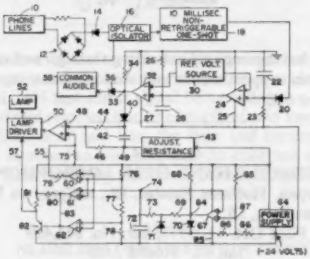
ing a control signal to said switching means to cause such switching means to connect said called subscriber unit to said available line when said called subscriber unit goes off hook.

4,139,740

FLASH-WINK GENERATING CIRCUIT

Cordell V. Castleman, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Division of Ser. No. 675,949, Apr. 12, 1976, Pat. No. 4,046,970.
This application May 26, 1977, Ser. No. 800,730
Int. Cl.[2] H04M 1/00
U.S. Cl. 179—81 C **2 Claims**



1. A flash and wink generating circuit for use in telephone systems comprising a triangular waveform generator with balanced resistance charge and discharge paths so as to produce a very symmetrical waveform, said waveform generator having a capacitor connected to its input in a manner to slow the change in input thereto and regulate the rate of the triangular waveform generator;

an output means;

a reference voltage source; and

comparator means having a first input connected to said reference voltage source and having a second input connected to said waveform generator to receive the triangular waveform voltage therefrom and further having its output terminal connected to said output means so as to activate said output means when the voltage from the waveform generator exceeds predetermined voltages from said reference source, said comparator means comprising a first comparator operating with a first reference voltage so as to activate said output means whenever the voltage on the triangular waveform exceeds a first chosen value in a first direction, and said comparator means further comprising second and third comparators connected respectively to said first and a second reference voltage so as to operate whenever the voltage on the the triangular waveform exceeds said first chosen value in said first direction and a second chosen value in said first direction and a second chosen value in a second direction opposite to said first direction, respectively, the outputs of said second and third comparators being combined and connected to activate the output means during the times when the triangular waveform voltage is above and below said chosen values.

4,139,741

PHONE GUARD FOR LOCKING OUT LONG-DISTANCE CALLS

Austin R. Q. Kennedy, 4532 W. 17th St., Los Angeles, Calif. 90019

Filed Jan. 18, 1978, Ser. No. 870,450
Int. Cl.[2] H04M 1/66
U.S. Cl. 179—90 D **11 Claims**

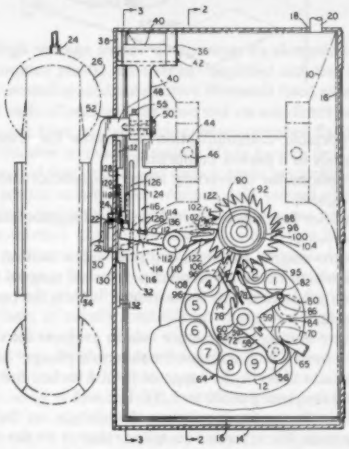
1. A telephone lock attachable to a telephone, the telephone having first dialing means, said first dialing means having an initial position for dialing a multiplicity of digits and an operatively hand-held receiver and speaker placeable on a switch, the telephone being in a non-operative state, when said hand-held receiver is placed on the switch, and in an operative state when said hand-held receiver is removed from said switch, the lock permitting a user to dial local calls only, the local calls being dialable with a first predetermined number of digits, the first digit being assigned for calling an operator, in combination comprising:

a housing;

support means connected to said switch and movable from a standby position to an operative position, and connected to said housing for said receiver and speaker to rest upon in said standby position, said standby and operative positions corresponding to said non-operative, and operative states, respectively;

second dialing means having an initial state corresponding to the initial position of the first dialing means, and being connected to the first dialing means for enabling a user to dial a selected number of the digits sequentially upon the receiver and speaker having been lifted from said support means, said second dialing means including a ratchet wheel rotatably mounted on said housing, an elongated arm extending radially from said ratchet wheel;

first dialing stop means for restraining the user form dialing the first digit on said second dialing means for reaching the operator on at least an initial dialing;



counting means for counting the first number of digits, comprising:

a cam rigidly secured to said first dialing means, including ratchet wheel advancement means cooperating with said ratchet wheel;

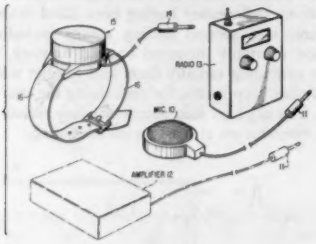
spring means secured with one end thereof to said housing and with its other end to said ratchet wheel for urging said ratchet wheel to move in one direction, said ratchet wheel being advanceable from an initial position against the action of said spring means by a first preset angle by said ratchet wheel advancement means following dialing of each one of said predetermined number of digits; and

second dialing stop means for restraining the user from dialing an additional number of digits beyond said predetermined number of digits upon said ratchet wheel having advanced from said initial position by a second preset angle, said second preset angle being substantially a multiple of said first preset angle, said multiple of said first preset angle corresponding to said first predetermined number of digits,

said ratchet wheel advancement means being settable on said cam from a normally occupied first position and first occupied shape to a second position and second occupied

shape, and being movable in a predetermined direction when coming in contact with at least a portion of said ratchet wheel upon said dialing means executing a motion in a direction opposite to said predetermined direction by a first prearranged angle to said second position and said second shape, and being arranged to return to said first position and said first shape upon said dialing means having been moved by a second prearranged angle beyond said first prearranged angle in said direction opposite to said predetermined direction.

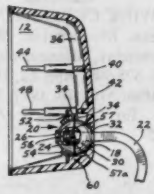
4,139,742
CUTANEOUS COMMUNICATION DEVICE
Jay F. Walker, P.O. Box 2012, Newport Beach, Calif. 92663
Filed Feb. 2, 1977, Ser. No. 764,879
Int. Cl.[2] H04R *25/00*
U.S. Cl. 179—107 BC **8 Claims**



1. A portable communication apparatus for transmitting audio signals to a person comprising:
a microphone for converting audio frequencies into electrical signals;
an amplifier for converting the electrical signals into signals for driving;
an electro-magnet having a top pole and a bottom annular pole which retain an annular permanent magnet therebetween wherein a coil is positioned within the permanent magnet;
a plunger having an armature which projects into the coil and a head which engages the skin, said plunger having an excursion ratio in the range of 0–0.04 inches and a vibrational frequency of 30 to 1,000 Hz; and
a resilient flange for supporting the plunger on the bottom pole with the armature in space relation to the top pole wherein the electro-magnet is mounted in a casing which is attached to the wrist of the person and transmits audio signals to cutaneous nerve receptors in the wrist which, in turn, relay reception of the audio signals to the persons brain.

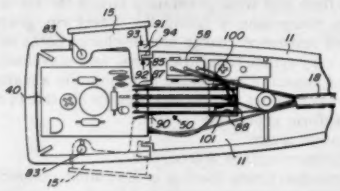
4,139,743
HEADSET
Dean W. Flygstad, St. Paul, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Jul. 18, 1977, Ser. No. 816,321
Int. Cl.[2] H04M *1/05*
U.S. Cl. 179—156 A **19 Claims**

1. A headset to be worn on the head of an operator comprising:
a. an ear cup housing a receiver and having seat means surrounding an aperture in said ear cup;
b. boom support means having complimentary configuration with respect to said seat means to provide triaxial rotation in said seat means and being rotatably disposed against said seat means internal of said ear cup, and comprised of two semispherical members each having an aperture for receiving a boom and means for providing rotational movement therebetween to lockably engage a boom when a longitudinal biasing force is applied to bias said boom support means against said seat means;
c. means providing a longitudinal biasing force against said boom support means thereby biasing said boom support means against said seat means; and,



d. a boom having one end extending through and carried by said boom support means and a microphone supported at the other end.

4,139,744
REVERSIBLE HAND-HELD MICROPHONE
Thaddeus Pypno, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 11, 1977, Ser. No. 841,499
Int. Cl.[2] H04M *1/03*
U.S. Cl. 179—167 **9 Claims**



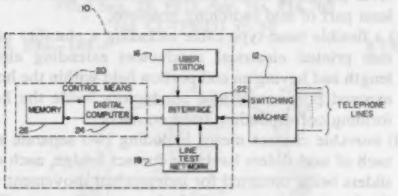
1. A hand-held microphone assembly comprising:
a reversibly positionable actuator member;
a microphone housing having two external openings contained therein, said external openings providing clearance for the actuator member;
means for supporting the actuator member in position in one of the housing external openings;
a switch fixedly disposed within the housing; means for actuating said switch from either of two locations, one of said two locations corresponding to one of said two external openings and the other one of said two locations corresponding to the other one of said two openings; and
said switch activating means being engageable by said actuator member from either of said two locations.

4,139,745
TELEPHONE LINE TEST SYSTEM
Glynn R. Ashdown, Hawthorn Woods; Gary R. Smith, Buffalo Grove, and Kenneth A. Finder, Highland Park, all of Ill., assignors to Teradyne, Inc., Boston, Mass.
Filed Nov. 5, 1975, Ser. No. 629,102
Int. Cl.[2] H04B *3/46*; H04M *3/26*
U.S. Cl. 179—175.3 F **14 Claims**

1. Apparatus for diagnostic testing of two wire telephone lines comprising:
first line test means, responsive to a first test command signal to measure for a selected two wire telephone line the resistance between a point of potential reference and each of said wires and the resistance between said wires,
a second line test means responsive to a second test command signal to measure for said selected line the reactance

between said point of potential reference and each of said two wires and the reactance between said two wires,

a control means including a programmed digital computer and associated memory, and providing means for selecting said line, means for generating a first and second test command signals associated with selected line, and means



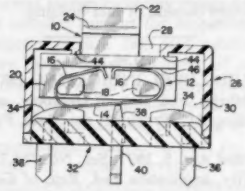
responsive to the measurements by said first and second line test means on said selected line to provide a test result signal, said test result signal being indicative of the identity of said selected line, the length of said line, the type of termination of said line, the type and location of equipment attached to said line, and the existence and approximate position along said line of faults in said line.

4,139,746

SLIDE SWITCH CONSTRUCTIONS

Guy M. Farrell, Elmhurst; Martin Gaber, Wilmette, and Joseph J. Spedale, Chicago, all of Ill., assignors to Chicago Switch, Inc., Chicago, Ill.

Filed Oct. 5, 1977, Ser. No. 839,442
Int. Cl.[2] H01H *15/06*
U.S. Cl. 200—16 D **4 Claims**



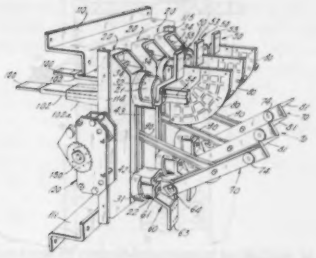
1. In an assembled slide switch construction wherein at least two contacts are positioned on a base, a slider, and a bridging contactor in assembly with said slider, means for attaching the slider assembly to the base while permitting sliding movement of the slider assembly relative to the base whereby the contactor shifts between a first position completing a circuit between the contacts and a second position whereat the contactor is out of engagement with at least one contact, resilient means for pressing the contactor against the contacts on the base during switch operation, and including means for holding the slider and contactor together whereby the assembly thereof remains intact when separated from the base, the improvement wherein said contactor comprises a strip of resilient material, said strip defining an elongated bridging portion, spring arms formed at each end of the bridging portion, said arms comprising opposed return portions, said slide defining a central portion extending toward said base, laterally extending supporting stud means formed on said central portion of said slider, said return portions extending around said stud means, a separate engaging surface defined by said slider adjacent said central portion for engaging said spring arms, said stud means being positioned between said engaging surface and said base, said engaging surface pressing the spring arms whereby the spring arms bend relative to said bridging portion when the assembly is attached to the base to achieve pressing of said bridging portion against said contacts, said stud means serving as hanger means for holding said assembly intact when the assembly is separated from said base, and said stud means serving as drive means which are driven against said contactor during sliding movement of the slider assembly to achieve movement of said contactor relative to the base.

4,139,747

HIGH VOLTAGE SWITCH WITH MOLDED SUPPORT BASE

Walter B. Kelly, Laughlintown, and Frank J. Pokorny, Hatboro, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Aug. 9, 1976, Ser. No. 712,641
Int. Cl.[2] H01H *31/00*
U.S. Cl. 200—48 KB **9 Claims**



1. A high voltage switch comprising: an elongated support base of molded plastic material having front and rear surfaces; first and second spaced conductive terminals fixed adjacent the opposite ends of said support base and on said front surface of said support base; a stationary contact member fixed to said first conductive terminal; a switch blade having first and second ends; said first end of said switch blade pivotally mounted on said second conductive terminal; said second end of said switch blade movable into and out of engagement with respect to said stationary contact member as said switch blade is rotated on said second conductive terminal; an insulation operating link having first and second ends; said first end of said operating link pivotally connected to a central region of said switch blade; an axially rotatable operating rod disposed adjacent said rear surface of said support base and extending perpendicularly to the direction of elongation of said support base; said second end of said operating link pivotally connected to said operating rod, whereby rotation of said operating rod moves said switch blade between an engaged and disengaged position relative to said stationary contact; an operating mechanism connected to one end of said operating rod; said support base having first and second openings therethrough, each extending between said front and rear surfaces, and disposed adjacent the edges of said first and second terminals respectively; and at least one elongated bus extending through one of said first and second openings and having one end connected to the terminal of said first and second terminals adjacent thereto, and having a second end with a terminal thereon which is behind said rear surface of said support base.

4,139,748

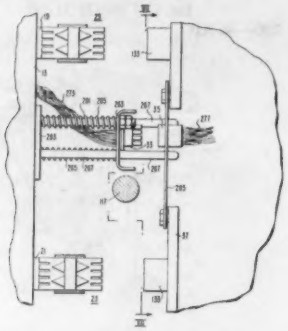
SECONDARY CONTACTS FOR DRAWOUT SWITCHGEAR

Jerome K. Wolfe, Franklin Borough; Jack G. Hanks, Bethel Park, and James O. Rexroad, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1977, Ser. No. 757,103
Int. Cl.[2] H01H *9/20*
U.S. Cl. 200—50 AA **5 Claims**

1. Drawout switchgear comprising a cell having an opening at the front thereof, the cell comprising a rear wall opposite the opening, a circuit interrupting unit movable into and out of the cell, first stationary terminal means supported on the rear wall,

second stationary terminal means supported on the rear wall, first contact means supported on the rear wall, first and second movable terminal means on said unit and connectable with the corresponding stationary terminal means, second contact means on said unit and connectable with the first contact means, said unit being movable between disconnected, intermediate, and connected positions, of the terminal means and of the contact means, corresponding first and second terminal means being connected only when said unit is in the connected position, corresponding first and second contact means being



connected only when said unit is in and between the intermediate and connected positions, the spacing between the first and second contact means being less than that between the corresponding first and second terminal means when said unit is between the disconnected and intermediate positions, and biasing means mounting one of the contact means in connection with the other contact means to effect contraction of the biasing means when said unit moves to the connected position and to effect expansion of the biasing means when said unit moves away from the connected position.

4,139,749

CONTROL LEVER ACTUATED SWITCH

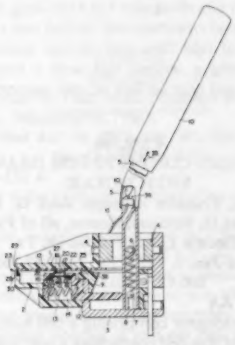
Wolfgang Scherzer, Bad Neustadt; Ekkehard Woesthoff, Wermelskirchen, and Oswald Reuss, Unterelsbach, all of Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf, Bad Neustadt, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 775,313

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609906

Int. Cl.[2] H01H *9/00, 15/00*

U.S. Cl. 200—61.54 **18 Claims**



1. A control lever actuated switch for mounting on the steering column of a motor vehicle, comprising:

(a) a housing mountable on the steering column of the motor vehicle;

(b) a control lever mounted on the housing for separate rocking movement independently about two mutually perpendicular axes between a plurality of switching positions for each such movement, the housing and the control lever including detent means for retaining the lever in at least part of said switching positions;

(c) a flexible band-type cable including a plurality of separate printed electrical conductors extending along its length and having an end portion held within the housing, exposed portions of said conductors inside the housing forming corresponding fixed contacts;

(d) movable contact means including two separate sliders, each of said sliders having a contact bridge, each of said sliders being mounted for independent movement within the housing along, respectively, generally mutually perpendicular separate paths between at least two switching positions with one of said slider switching positions placing its contact bridge in electrical contact with some of said fixed contacts, and each of said sliders being drivingly connected to said lever so as to be independently driven by said control lever with one of said sliders moving along its path between its switching positions in response to rocking of said lever about one of said axes between its corresponding switching positions and the other of said sliders being moveable along its path between its switching positions in response to rocking of said lever about the other of said axes between its corresponding switching positions, so as to move said slider contact bridges into and out of bridging relationship with corresponding ones of said fixed contacts at respective switching position; and

(e) said cable extending through an opening provided in the housing for external electrical connection of said electrical conductors outside of said housing.

4,139,750

LIQUID LEVEL INDICATING DEVICE

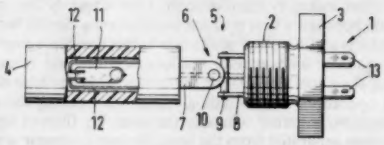
Karl Rau, Muhlheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 5, 1977, Ser. No. 784,735

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615256

Int. Cl.[2] H01H *35/18*

U.S. Cl. 200—84 R **11 Claims**



1. A liquid level indicating device for indicating a predetermined liquid level in a container comprising

an externally theaded mounting member in rotatable engagement with an internally threaded bore in a vertical wall of the container;

float means movable with the level of liquid in the container;

electrical switch means carried by said float means to be actuated when said float means is at the predetermined liquid level in the container; and

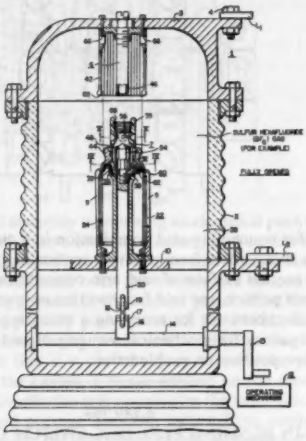
universal coupling means engaging with and directly supported on said mounting member and pivotally supporting said float means and permitting said float means to pivot in various planes relative to said mounting member, including a plane oblique to the vertical wall.

4,139,751

PUFFER-TYPE COMPRESSED-GAS CIRCUIT INTERRUPTER

Joseph R. Rostron, Monroeville; Charles F. Cromer, Penn Township, Allegheny County, and Paul J. Yuran, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1975, Ser. No. 616,703
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—148 A 8 Claims



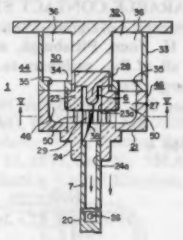
1. A puffer-type compressed-gas circuit-interrupter adaptable for high-current ratings including means defining a generally-cup-shaped metallic support for supporting a relatively-stationary contact structure (6), said relatively-stationary contact structure (6) including a cluster of stationary main contact fingers (42) disposed in a generally cylindrical arrangement and a centrally-disposed stationary tubular venting arcing contact (46), venting means (66) provided at the rear end of said generally-cup-shaped metallic support for freely venting arced gases during the opening operation of the circuit-interrupter, means defining a cooperable movable contact structure (7) comprising a movable solid arcing contact (54) and a cluster of movable secondary contact arcing fingers (48) surrounding said movable solid arcing contact (54), a movable operating-cylinder assembly (22) carrying said movable contact structure (6) and an insulating nozzle, said movable operating-cylinder assembly (22) having disposed thereon adjacent its forward end an annular relatively-heavy movable main contact (44) making cooperable engagement with said cluster of stationary main contact fingers (42) in the closed-circuit position of the circuit-interrupter, means defining a relatively-fixed piston member (26), said movable operating-cylinder assembly (22) slidable over said relatively-fixed piston member (26) during the opening operation, the relatively heavy movable main contact (44) making separable engagement from said stationary main contact fingers (42) prior in point of time to the subsequent separation of the movable arcing secondary contact fingers from said centrally-disposed stationary tubular venting arcing contact (46) so that arcing occurs only between the stationary tubular arcing contact (46) and the solid movable arcing contact (54) within said nozzle, the forward extending ends of the stationary main contact fingers (42) having enlarged rounded portions (69) to enable the circuit-interrupter to have a high electrical voltage-withstand capability, the forward end (46*a*) of said centrally-disposed stationary tubular venting arcing contact (46) terminating rearwardly of an imaginary plane ("Y—Y") passing through the tips (69) of the main stationary contact fingers 42, and compressed gas being permitted to freely flow at the initial time of arc establishment between the movable arcing plug contact (54) and the stationary tubular venting contact (46).

4,139,752

GAS-TYPE CIRCUIT-BREAKER

Kosaku Itai, and Yoshihiro Ueda, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1976, Ser. No. 679,597
Claims priority, application Japan, May 30, 1975, 50/65951
Int. Cl.[2] H01H *33/82, 33/00*
U.S. Cl. 200—148 R 10 Claims



1. A gas-blast-type of circuit-interrupter including, in combination:

(a) means defining an outer gas-confining casing structure (2);

(b) means defining a substantially-enclosed arc-extinguishing unit (21) disposed interiorly within said outer gas-confining casing structure (2) having an orifice-opening (24*a*) provided in one wall portion thereof;

(c) means defining a relatively-stationary non-vented contact disposed within said interiorly-disposed substantially-enclosed arc-extinguishing unit (21);

(d) means defining a cooperable movable tubular venting contact (7) movable through said orifice-opening (24*a*) during the closing operation of the circuit-interrupter and into contacting closed-circuit engagement with said relatively-stationary non-vented contact (6) during the closing operation of said gas-blast-type of circuit-interrupter;

(e) operating means for causing the withdrawal of said movable tubular venting contact (7) out of contacting engagement with said relatively-stationary contact during the opening operation of the circuit-interrupter and out of said orifice-opening (24*a*) and away from said substantially-enclosed arc-extinguishing unit (21) to an isolated open-circuit position therefrom during the opening operation of the gas-blast-type of circuit-interrupter;

(f) said substantially-enclosed arc-extinguishing unit (21) additionally having an apertured, partition-plate means (34) associated therewith and dividing said substantially-enclosed arc-extinguishing unit into two separate sub-division gas chambers;

(g) one of said sub-division gas chambers being a gas-storage region (32) disposed generally rearwardly of said relatively-stationary non-vented contact (6) for the adjacent storage of gas under pressure generated during high instantaneous values of arcing current;

(h) the other sub-division gas chamber (27) providing an annular, inwardly, gas-directing gas-flow passage directing gas flow from said gas storage chamber (32) radially inwardly into the arcing region (29) located between the disposition of the relatively-stationary non-venting contact (6) and the upstream entrance opening of said orifice-opening (24*a*), whereby during the opening operation of the circuit-interrupter at a time when the tubular movable venting contact is disposed within the orifice-opening (24*a*), heated compressed gas, generated during high instantaneous values of arcing current, will be forced through said apertured partition-plate means (34) and

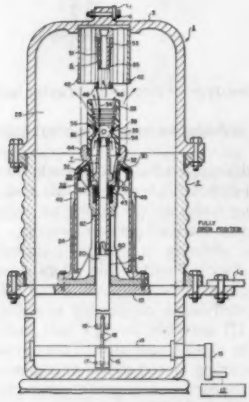
stored within the first mentioned sub-division gas-storage region (32) to be confined therein until the time of relatively-low instantaneous values of arcing current, at which time said stored compressed gas within the gas-storage region (32) will flow, in a reverse fashion, through said partitioned plate-means (34) and through said gas-directing passage means into the arc established within said orifice opening (24*a*) and through said tubular vented contact 7 for arc-extinguishing purposes.

4,139,753

PUFFER-TYPE COMPRESSED-GAS CIRCUIT-INTERRUPTER HAVING IMPROVED SEPARABLE CONTACT STRUCTURE

Charles F. Cromer, Levelgreen-Penn Township, Allegheny County; Kue H. Yoon, Pittsburgh, and Willie B. Freeman, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1976, Ser. No. 725,313
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—148 A **8 Claims**



1. A double-flow puffer-type compressed-gas circuit-interrupter including means defining a relatively-stationary hollow venting contact structure, said relatively-stationary hollow venting contact structure including a stationary tubular metallic venting contact-support (51) and a cluster of circumferentially-disposed resilient contact-fingers (46) encircling said stationary tubular metallic venting contact-support, a relatively-movable cooperable venting contact structure comprising a movable tubular venting arcing contact, a movable operating cylinder carrying said movable tubular venting arcing contact and slidable over a relatively-fixed piston structure to compress gas in the confined space (30) therebetween, the movable tubular venting arcing contact making internal contacting engagement with said cluster of stationary resilient contact fingers in the closed-circuit position of the device, and an insulating ring (55) disposed about the extremity of the stationary tubular metallic venting contact-support (51) to prevent welding between the stationary resilient contact-fingers (46) and said tubular stationary venting metallic contact-support (51).

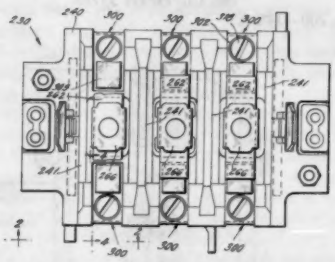
4,139,754

STATIONARY CONTACT COMBINATION

William H. Hofferberth, Finksburg, Md., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Oct. 18, 1976, Ser. No. 732,976
Int. Cl.[2] H01H *67/02*
U.S. Cl. 200—281 **6 Claims**

1. A contact combination for an electrical switching device, said combination including a stationary contact arm, a contact positioned at a front section of said arm and mounted on a first surface thereof, an aperture through a rear section of said arm, a retainer constructed of spring metal, said retainer including rear and front portions, said rear portion including spaced arms between which said front section is sandwiched with said aperture in alignment with aperture means of said rear portion, fastening means extending through said aperture and aperture



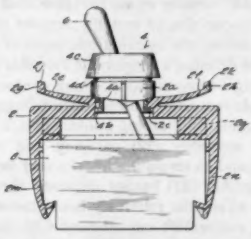
means for connecting said combination in a circuit, said front portion being offset from said rear section in a direction away from a second surface of said arm opposite said first surface, said front portion and said front section cooperating to form a recess therebetween for receiving a mounting formation of a contact carrier for mechanical securing of said combination in operative position on such carrier.

4,139,755

SNAP-IN BUSHING ELECTRIC SWITCH INCLUDING A FRAME WITH INTEGRAL BACK-UP ELEMENTS HAVING PANEL-ENGAGING RAMPED RISER BARS

Jerome K. Hastings, and John J. Keranen, both of Sussex, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jul. 6, 1976, Ser. No. 702,761
Int. Cl.[2] H01H *9/02*
U.S. Cl. 200—295 **8 Claims**



1. A snap-in mounting means for an electric switch having a housing including a frame and a base secured thereto with the base enclosing switch contacts, which mounting means adapts the switch to be mounted from the rear through a hole in a mounting panel so that the switch actuator is accessible at the front of the panel comprising:

a bushing on said frame having a bore therethrough including means for the retaining the switch actuator therein;

a circular locking snap-in skirt on said bushing flaring from the forward end thereof outwardly and back toward the frame;

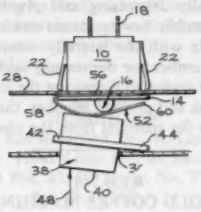
and a pair of back-up elements on said frame extending from opposite sides of said bushing in opposite directions with small upward angles, said elements being tapered in cross-section and having riser bars at their ends, with the upper surfaces of said riser bars being ramped thereby to accommodate a larger range of panel thicknesses between said snap-in skirt and said riser bars without overstressing said back-up elements.

4,139,756

PUSH BUTTON SWITCH WITH SECONDARY PUSH BUTTON

John B. Tsen, and David A. Reel, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 3, 1977, Ser. No. 756,496
Int. Cl.[2] H01H 3/20, 3/12
U.S. Cl. 200—330 2 Claims



1. In a control assembly comprising an electrical push button switch supported from a mounting means, said switch including a primary push button and a secondary push button, a control panel positioned over the switch and spaced therefrom, an opening formed in the control panel offset from the centerline of the primary push button of the switch, said secondary push button being positioned in the opening of the control panel so that it is out of alignment with the primary push button of the switch, a flange formed on the secondary push button to overlie the said opening on the inner side of the control panel and prevent the push button from passing out through the opening, the said flange having an extension on the side of the secondary push button which is nearest the primary push button, said flange extension serving as a fulcrum means with respect to the control panel, said flange extension being of sufficient length to provide supplementary lever action to set the switch, thereby preventing jamming when the secondary push button is depressed adjacent the side which is remote from the flange extension and further including a cantilever spring sandwiched between the two push buttons with one end of the spring fixedly mounted to the push button switch on a side remote from the flange extension so that the stiffest portion of the spring is adjacent the side of the secondary push button that is remote from the flange extension, the other end being a resilient spring blade of sufficient width to provide a bearing surface between the primary and secondary push buttons, said spring blade having an elongated distal end, and wherein said assembly further includes stop means engageable by said distal end to limit the amount of depression of the secondary push button thereby protecting the switch and retaining the secondary push button in the control panel opening.

4,139,757

METHOD AND DEVICE FOR IGNITING GAS PLANING

Ladislav Sipek, Täby, Sweden, assignor to Centro-Maskin Goteborg AB, Goteborg, Sweden

Filed Mar. 14, 1977, Ser. No. 777,420
Int. Cl.[2] B23K 7/00
U.S. Cl. 219—68 3 Claims

1. A method for igniting gas planing on a workpiece comprising:

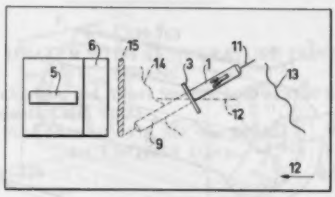
imparting a substantially continuous motion to said workpiece past the gas planing burner;

preheating a certain amount of metal to ignition temperature by means of a point heat source;

imparting to said heat source a relative movement with respect to said planing burner with a speed component substantially equal to the absolute movement speed resultant of said workpiece;

forming at least one strip of preheated metal on said workpiece surface;

providing a flow of planing oxygen for igniting said strip; and



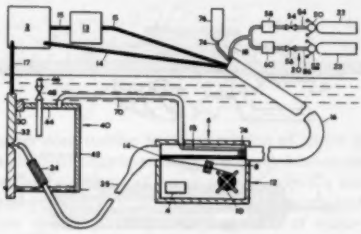
said strip extending transverse to the flow direction of said planing oxygen.

4,139,758

METHOD OF ARC WELDING UNDER WATER

Brian E. Pinfold, 34 Sudeley Walk, Putnoe, Bedford, England

Filed Jan. 12, 1977, Ser. No. 758,867
Claims priority, application United Kingdom, Jan. 12, 1976, 1078/76; Dec. 23, 1976, 53715/76
Int. Cl.[2] B23K 9/16
U.S. Cl. 219—74 1 Claim



1. A method of arc welding in an underwater chamber containing a gaseous environment, including the steps of forming the gaseous environment at superatmospheric pressure in the chamber by passing into the chamber at least one inert gas selected from the group consisting of argon, krypton, xenon and helium and at least one oxygen-containing gas selected from the group consisting of oxygen and carbon dioxide, depositing weld metal from a consumable, flux-cored arc welding wire containing at least one strong deoxidiser selected from the group consisting of magnesium, aluminum, zirconium, titanium, barium, lithium and calcium, the proportion of oxygen in said oxygen-containing gas in the gaseous environment having a partial pressure less than the partial pressure of oxygen in air at atmospheric pressure and constituting less than 14% by volume of the gaseous environment and extracting the fume emitted by the welding from said gaseous environment.

4,139,759

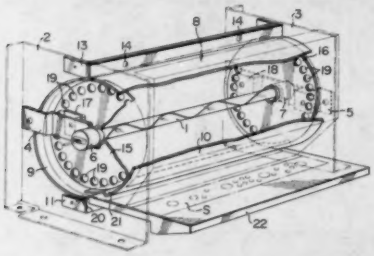
EXPOSURE DEVICE FOR A THERMAL STENCIL SHEET

Noboru Hayama, Tokyo; Takanori Hasegawa, Hachioji; Kiyoshi Takehara, Kokubunji, and Masakazu Kera, Tokyo, all of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Dec. 13, 1977, Ser. No. 860,166
Claims priority, application Japan, Dec. 23, 1976, 51-155402
Int. Cl.[2] H05B 1/00
U.S. Cl. 219—216 7 Claims

1. An exposure device for a thermal stencil sheet comprising a linear electronic flash discharge tube, and an enclosure which is made of a plate member curved around said tube in a substantially cylindrical shape coaxial with said tube and which has a sole slit opening parallel to said tube, said enclosure having a substantially cylindrical inner surface adapted to receive a thermal stencil sheet introduced therein through said slit open-

ing and curved along said inner surface, wherein said slit opening also serves as a slit opening for taking out the thermal



stencil sheet which has been introduced into said enclosure and exposed to the radiation from said flash discharge tube.

4,139,760

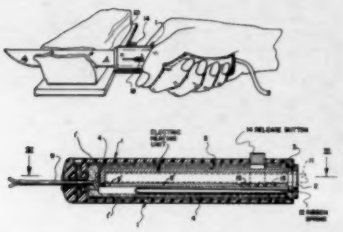
ELECTRICALLY HEATED KITCHEN UTENSIL

Minnie V. Banks, 802 2nd St., SW., Clarion, Iowa 50525

Filed Mar. 18, 1977, Ser. No. 778,837

Int. Cl.[2] H05B *1/00;* **A47J** *1/02;* **B26B** *1/00;* **A47J** *43/28*

U.S. Cl. 219—227 **2 Claims**



1. A kitchen utensil, comprising

a substantially elongated hollow handle having a lining of thermally insulative material therein, said handle having an opening at one end;

an additional lining of thermally insulative material in a heating part of the handle, said additional lining having a front end and an opening at its front end registering with the opening of the handle;

a pair of substantially parallel spaced electrical heating elements in the additional lining of the heating part of the handle, said heating elements forming the side walls of a channel in said handle, said channel extending from the opening at said one end of the handle and having an open bottom, a closed top, a closed rear end and an open front end, said heating elements defining an elongated electric heating unit in said handle;

a member having front and rear ends, said member being pivotally affixed to the heating elements at said rear end thereof and being positioned at the open bottom of the channel, said pivoted member having laterally extending portions;

electrical power supply conductors extending through the rear of the handle and electrically connected to the heating elements for supplying electrical energy to said heating elements to generate heat;

a kitchen device of thermally conductive material having a shank adapted to fit into the channel in engagement with the pivoted member and between the heating elements in the handle via the opening in the one end of the handle; and

releasable securing means in the handle at the channel for releasably securing the kitchen device in said channel in contact with the heating elements in a manner whereby when the heating elements generate heat the kitchen device is heated, said releasable securing means comprising interengageable teeth on the shank of said kitchen device and said pivoted member, a U-shaped ribbon spring between said pivoted member and the handle and pressing said pivoted member against said shank of said kitchen device to hold said kitchen device tightly in the channel, and a movable pushbutton member at the top of the handle for manually depressing said pivoted member, said pushbutton member having means straddling the channel and engageable with the laterally extending portions of the pivoted member for depressing said member against the bias of said spring to disengage the interengaged teeth of on said shank and pivoted member, thereby freeing said kitchen device for removal from the channel.

4,139,761

HOUSEHOLD COFFEE MACHINE WITH CALCIFICATION INDICATOR

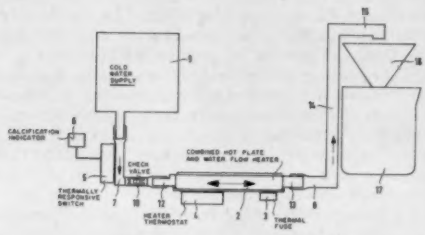
Frank Obrowski, Bad Duerrheim, Fed. Rep. of Germany, assignor to Wigo Gottlob Widmann & Stiehne GmbH & Co., KG, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Apr. 4, 1977, Ser. No. 784,437

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615824

Int. Cl.[2] H05B *1/02;* **A47J** *31/56;* **F24H** *1/10;* **A47J** *31/58*

U.S. Cl. 219—308 **4 Claims**



1. In a household coffee machine including

an electrically energized flow heater,

a cold water supply conduit,

a hot water outlet,

a thermostat in heat exchange relationship with said flow heater and operable to control the temperature of the flow heater,

a calcification indicator, and

a thermally responsive switch operable to determine the operating condition of said calcification indicator;

the improvement comprising:

said thermally responsive switch being disposed in heat exchange relationship with said cold water supply conduit,

said calcification indicator and said thermally responsive switch being mutually series connected and comprising a circuit portion connected in parallel with said thermostat,

said thermally responsive switch and said thermostat being normally closed,

said circuit portion including said calcification indicator and said responsive switch being designed with such a high impedance relative to the impedance of the thermostat that the calcification indicator cannot operate if the thermostat is closed,

the opening temperatures of said thermostat and said thermally responsive switch being such that, with a calcified state of the flow heater existing,

said thermostat will be opened because of an abnormally high temperature rise in the flow heater, and

said thermally responsive switch will remain closed

because of the relatively cold temperature of the cold water in said cold water supply conduit to energize said calcification indicator and to maintain the flow heater energized, and

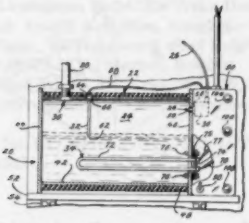
the opening temperatures of said thermostat and said thermally responsive switch are such that, during an uncalcified condition of the flow heater, said thermally responsive switch is opened after the conclusion of water heating by the flow heater and before the opening of the thermostat in response to the presence of steam in the cold water supply conduit.

4,139,762

HUMIDIFIER

Harry H. Pohrer, 824 Brentford Dr., St. Louis, Mo. 63125, and Emil A. Singler, 11062 Littie Dr., St. Louis, Mo. 63126

Filed Feb. 22, 1977, Ser. No. 770,444
Int. Cl.[2] F24F *3/14*
U.S. Cl. 219—362 **18 Claims**



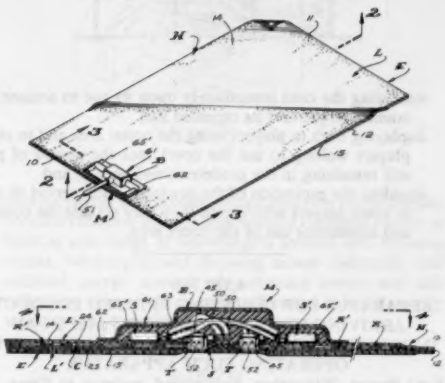
1. A device for delivering humidity to an environment and for maintaining a desired humidity level in said environment comprising a substantially closed housing for containing a supply of water to be vaporized, means for feeding water into said housing including a source of water and means for controlling the flow of water from said source into said housing, said water flow control means including controllable valve means, actuable means operable to enable the valve means to be energized when the water level in said housing falls below a desired water level, a single probe responsive to detection of the desired water level in said housing and first timer means energized by said probe when the water level in the housing rises sufficiently to initially make contact with the probe to energize the first timer means to maintain the valve means energized for a predetermined time interval and thereafter to deenergize the valve means to prevent the flow of water from said source into said housing, said probe including an electrically conductive sensing element attached to said housing at an upper location and extending downwardly in the housing to a free end at an intermediate location therein which represents the desired water level, the position of the free end of said sensing element completing an electric circuit with the water when the water is in contact therewith, said actuatable means including second timer means to effect deenergization of said valve means and prevent reenergization thereof and further admission of water into the housing if a water filling operation under control of the first timer means exceeds some predetermined time, a heater element in said housing at an elevation below the free end of said sensing element in contact with the water, a humidity sensing control device located in the environment to be controlled including means settable to establish a predetermined desired humidity level to be maintained therein, means operatively connecting said control device to the heater element to energize the heater element to vaporize water contained in the housing when the level of humidity in the controlled environment is below the predetermined level to be maintained, and outlet means on said housing through which the vaporized water can pass, said outlet means including a conduit having one end connected to the housing and an opposite open end positioned to discharge vaporized water into the environment where the predetermined humidity level is being maintained.

4,139,763

BLANKET HEATER WITH TEMPERATURE CONTROL MEANS

James P. McMullan, and Albert Stevens, both of 2630 Seaman Ave., El Monte, Calif. 91733

Filed Mar. 10, 1978, Ser. No. 885,304
Int. Cl.[2] H05B *3/34*
U.S. Cl. 219—528 **9 Claims**



1. A heater construction having a portion of minor mass in which an elongate electric resistance primary heating element is arranged and a portion of major mass in which a normally open thermo responsive switching device is arranged and set to open when the temperature of the portion of minor mass reaches a predetermined, elevated, control temperature and to close when the temperature of the portion of minor mass is below said control temperature, a secondary elongate electric resistance heater element in the portion of greater mass to normally maintain that mass at a mean elevated temperature which is below said control temperature, a power supply circuit connected with the heating and heater elements and in which the switching device is connected to control the supply of power to said elements and an elongate heat conducting heat pipe in and extending between the portions of minor and major mass and conducting heat therebetween whereby the temperature of the portion of greater mass at the switching device is rapidly changed in response to corresponding changes in temperature of the area of minor mass, the portion of minor mass includes a flat, normally horizontal core of dielectric material, said primary heating element is an elongate metallic conductor on one surface of and carried by the core and an envelope of dielectric material enclosing the core and including top and bottom laminates with central portions overlying the top and bottom surfaces of the core and edge portions about the perimeter of the core and integrally joined.

4,139,764

EVENT MONITOR FOR COURT GAMES

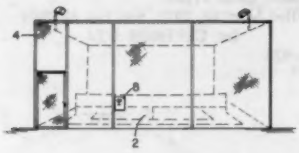
Julian L. Petrini; Madeline A. Petrini, both of 3748 Meru La., Santa Barbara, Calif. 93105; Richard A. Giacomotti; Sally A. Giacomotti, both of 542 Calle Mastil, Santa Barbara, Calif. 93111, and Ted L. Slater, 1491 Sycamore Canyon Rd., Santa Barbara, Calif. 93108

Filed Mar. 21, 1977, Ser. No. 779,610
Int. Cl.[2] G07C *1/28*
U.S. Cl. 235—92 GA **12 Claims**

1. A method of monitoring and controlling a predetermined

period of play for a game employing a court area and a card actuated counter, the method including the steps of:

requiring players entering the court area to actuate the counter to a predetermined period of play by employing a card, the counter then counting the elapsed period of play following its actuation by a card, the counter being positioned in an area external to the count and accessible to players waiting to play;



mutilating the card immediately upon its use to actuate the counter to prevent its repeated use;

displaying both to players using the count area and to other players waiting to use the court area the period of play still remaining in the predetermined period; and

signaling the expiration of the predetermined period of play to other players whereupon they may actuate the counter and commence use of the court area.

4,139,765

APPARATUS FOR COUNTING PRINTED PRODUCTS ARRIVING UPON A CONVEYOR PATH IN AN IMBRICATED PRODUCT STREAM AND METHOD OF OPERATING SUCH APPARATUS

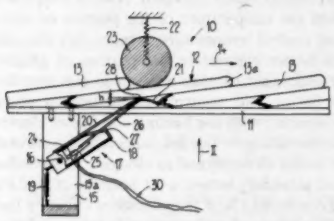
Rene Pomey, Winterthur, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,491

Claims priority, application Switzerland, Oct. 28, 1976, 13580/76

Int. Cl.² G06M *7/00*

U.S. Cl. 235—92 SB **10 Claims**



1. Apparatus for counting multisheet folded printed products conveyed in a continuous imbricated product stream in which the folded edge of each product is leading in the conveying direction and overlapping the preceding printed products and the edge opposite the folded edge is trailing comprising:

conveyor means for conveying the imbricated product stream, said conveyor means having a first side and a second side, said imbricated product stream being conveyed on said first side such that the trailing edges of the products opposite the folded edges bear against said first side;

means arranged relative to said imbricated product stream for urging the same against the first side of said conveyor means;

transducer cell means of a sound pick-up type having a feeler tip for generating a sequence of electrical signals when the feeler tip is engaged by the trailing edge of a product;

means mounting said transducer cell means at the second side of said conveyor means in the region of said urging means such that said transducer cell means extends from said second side through said conveyor means and protrudes beyond said first side toward said imbricated product stream with said feeler tip engageable with said product stream; and

counter circuit means connected to said transducer cell means and responsive to a first electrical signal of each generated signal sequence for counting the products of said stream.

4,139,766

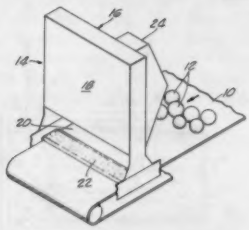
APPARATUS AND METHOD FOR COUNTING FRUITS AND OTHER OBJECTS

Tim D. Conway, Berkeley, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Aug. 15, 1977, Ser. No. 824,396

Int. Cl.² G06M *7/00*

U.S. Cl. 235—92 PK **25 Claims**



1. Apparatus for counting generally spheroidal or ellipsoidal objects randomly continuously moved across a fixed elongate transverse counting area, comprising:

(a) means for illuminating the objects within the confines of said counting area;

(b) means for successively scanning the counting area in a single fixed scanning path extending longitudinally of the counting area as the objects are moved across the counting area, and for generating successive timed binary signal pulses during each scan corresponding to the respective illumination levels of successively scanned discrete areas of each object, said signal pulses having a digital logic value of "1" when the illumination level of a scanned area varies in one direction with respect to a predetermined value, and a digital logic value of "0" when the illumination level varies in an opposite direction with respect to said predetermined value; and

(c) logic circuit means for grouping certain of said binary signal pulse values, as generated during successive scans of each object, into a recognition pattern having a configuration such that it will occur only once for each object scanned, and for decoding the binary values in said pattern to provide an output counting pulse for each object presented to the counting area.

4,139,767

PHOTODETECTOR WITH IMPROVED SIGNAL-TO-NOISE RATIO

Tadeusz Witkowicz, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 17, 1977, Ser. No. 842,622

Int. Cl.² H01J *39/12*

U.S. Cl. 250—214 A **2 Claims**

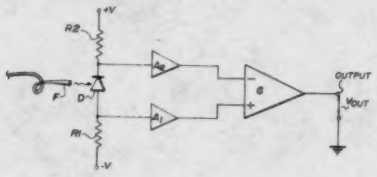
1. A photodetector/receiver circuit comprising:

a voltage source having a positive and a negative terminal;

a first resistor connected between said positive terminal and the cathode of a photodetector diode;

a second resistor substantially equal in resistance value to said first resistor, connected between said negative terminal and the anode of said photodetector diode;

said anode and cathode capacitively coupled, one to the inverting input of a differential amplifier, and the other to the noninverting input; and



the output of said differential amplifier comprising the output of said photodetector/receiver circuit.

4,139,768

IMAGING CHAMBER WITH ELECTRODE STRUCTURE

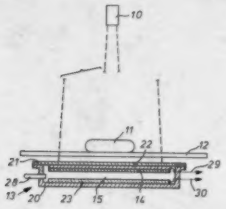
Willy K. Van Landeghem, Sint-Gillis-Waas; Daniel M. Timmerman, Mortsel; Arnold A. Willem, Moerbeke-Waas, and Walter F. De Winter, 's-Gravenwezel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jul. 26, 1977, Ser. No. 819,154

Claims priority, application United Kingdom, Jul. 28, 1976, 31513/76

Int. Cl.[2] B41M *5/00*; G03B *41/16*

U.S. Cl. 250—315 A **11 Claims**



1. An ionographic imaging chamber, which comprises: a chamber housing, first and second substantially planar electrodes; means supporting said electrodes in the chamber housing in spaced relation defining a gap between the mutually facing surfaces thereof; means connecting a voltage source to said electrodes, means enabling a flexible dielectric charge receptor member to be introduced into said chamber and into contact with one of said electrodes, and means supplying pressurized gas into said chamber housing whereby said flexible member is pressed tightly against the member surface, the improvement wherein a non-porous surface layer having a surface resistivity in the range of about $10^6 - 10^9$ ohms/cm^2 is disposed on the inwardly directed side of one of said electrodes, said surface layer carrying a three-dimensional pattern of grooves having a depth of at least 5 microns up to about 1000 microns and a width of about 10–1000 microns, said grooves receiving pressurized gas on the reverse side of said flexible member and facilitating separation of said member after imaging.

4,139,769

BORESIGHT METHOD AND APPARATUS

Eugene F. McCrum, Garden Grove; William K. Tomita, Huntington Beach; James G. Myers, Corona del Mar, and John T. Rehak, Santa Ana, all of Calif., assignors to Ford Aerospace & Communications Corporation, Dearborn, Mich.

Filed Sep. 22, 1977, Ser. No. 835,557

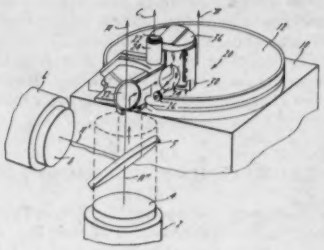
Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—341 **24 Claims**

1. Apparatus including a laser for directing a beam of radiation at a first wavelength along a first axis towards a distant target; means for detecting radiation in a range of wavelengths from said distant target along said first axis; and means for checking the alignment of said detecting means with said laser radiation along said first axis, wherein

said checking means includes a means for reflecting a portion of said laser radiation away from said first axis;

means for focusing said reflected portion of laser radiation to a predetermined point;



means located at said predetermined point for receiving said focused radiation and for responsively radiating energy at least in said range of wavelengths toward said focusing means, whereupon said focusing means collimates said radiated energy toward said relecting means and said reflecting means reflects said collimated radiated energy towards said detecting means.

4,139,770

SMOKE ALARM

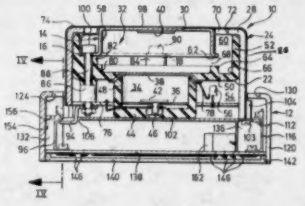
Hartwig Beyersdorf, Konsulweg 29, D-2409 Scharbeutz, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,464

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2652970

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—381 **16 Claims**



1. An alarm having a test chamber accessible to ambient air, a reference chamber axially positioned behind and electrically series connected with the test chamber, the reference chamber being less accessible to ambient air, at least one radiation source ionizing the chambers, a housing section in which an insulator surrounds the reference chamber with an essentially tubular wall section that has a diameter which is smaller than that of the tubular housing section, the housing section having a further tubular wall section joined thereto and an approximately ring shaped wall section connecting both tubular wall sections, an internal electrode supported by the reference chamber insulator perpendicular to the alarm axis, a center electrode also supported by the reference chamber insulator common to both chambers and parallel to and having approximately the same diameter as the internal electrode, the invention comprising the ring-like wall section being approximately in the plane of the center electrode, a tubular test chamber wall section that adjoins the inside of tubular housing section and extends axially outward from the ring-like wall section to surround the test chamber, a bowl-like external electrode for

the test chamber the external electrode having a flat bottom that is parallel to the center electrode, the external electrode's flat bottom being approximately in the plane of the outer end of outwardly extending tubular test chamber wall section, said external electrode having a diameter that is smaller than the inner diameter of said test chamber wall section and larger than the center electrode diameter, a jacket extending inward from the outer edge of the external electrode bottom to the ring-shaped wall section through an axial distance that is shorter than the distance from the external electrode to the center electrode, and connector elements spaced on the jacket to connect the jacket to the outward extending test chamber tubular wall section in order to form a gap between the jacket and the test chamber tubular wall section for the ambient air.

4,139,771

DEVICE FOR EXAMINING LUGGAGE BY MEANS OF X-RAYS

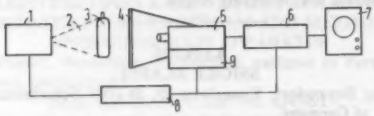
Manfred Dennhoven, Wiesbaden; Claus Kunze, Taunusstein, and Rainhard Kuehn, Wiesbaden, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 16, 1976, Ser. No. 649,662

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1975, 2532300

Int. Cl.² G01N *23/22*

U.S. Cl. 250—408 **14 Claims**



1. In a device for the inspection of objects, particularly luggage by means of X-rays emanating from an X-ray flash generator and passing through the object to be examined, to produce a shadow image on a fluorescent screen, which is received by a TV camera feeding an intermediate store, from which the stored video signals from the TV camera may be supplied to a TV monitor, and in which the X-ray flash generator, TV camera and intermediate store are interconnected by a control unit, the combination of the TV camera containing a pulse generator synchronized with the power supply line alternating current voltage, and the control unit being a synchronizing-unit rigidly coupling the line voltage to the TV camera and the X-ray flash generator, which synchronizing-unit, upon triggering of a start pulse initially prepares the intermediate store and thereafter triggers the X-ray flash synchronously with the supply line alternating current voltage.

4,139,772

PLASMA DISCHARGE ION SOURCE

Norman Williams, New Hope, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

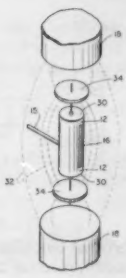
Filed Aug. 8, 1977, Ser. No. 822,866

Int. Cl.² H01J *27/00*

U.S. Cl. 250—423 R **11 Claims**

1. A method of forming a beam of particles which includes a plurality of ions of a desired material, comprising the steps of establishing between an axially extending anode and an axially extending cathode an electric discharge of sufficient intensity to dissociate a gaseous compound, which includes the desired material, into a plasma comprising various particles including a plurality of ions of the desired material; applying a magnetic field to said plasma; and discharging particles from the vicinity of said anode and said cathode in the form of a beam of particles including ions of the desired material, wherein the improvement comprises:

so disposing a pair of magnetic members, one adjacent to each axial end of said anode, as to constrict said magnetic field at said axial ends of the anode to increase the temperature of the plasma to a temperature above a maximum



temperature which may be achieved in the plasma in the absence of said magnetic members.

4,139,773

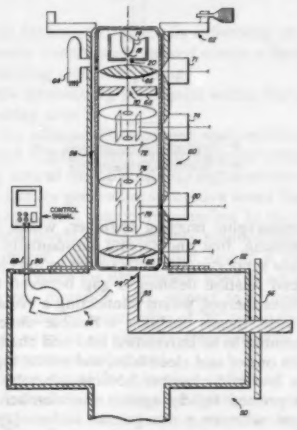
METHOD AND APPARATUS FOR PRODUCING BRIGHT HIGH RESOLUTION ION BEAMS

Lynwood W. Swanson, McMinnville, Oreg., assignor to Oregon Graduate Center, Beaverton, Oreg.

Filed Nov. 4, 1977, Ser. No. 848,386

Int. Cl.² H01J *27/00*

U.S. Cl. 250—423 R **22 Claims**



1. A method for producing a high intensity beam of ions from a gas substantially confined within a region bounded by a conductive enclosing means having an aperture therein, said method including the steps of:

(a) heating an oriented crystalline emitter of <110> iridium within the region to cause substantial surface mobility of iridium atoms at the tip of said emitter;

(b) applying a first voltage of sufficient negative potential with respect to the enclosing means to said emitter to cause <110> build-up of the tip of said emitter;

(c) cooling said emitter to inhibit substantial surface mobility of iridium atoms at the tip of said emitter;

(d) maintaining the gas in an immediate region surrounding the tip of said emitter at a sufficiently high pressure and a sufficiently low temperature to increase the supply of low energy gas molecules available for ionization in said immediate region; and

(e) applying a second voltage of sufficient negative potential with respect to the closing means to said emitter to ionize molecules of the gas in said immediate region and acceler-

ate the resultant ions through the aperture in the enclosing means.

4,139,774

APPARATUS FOR IRRADIATING A SPECIMEN BY AN ELECTRON BEAM

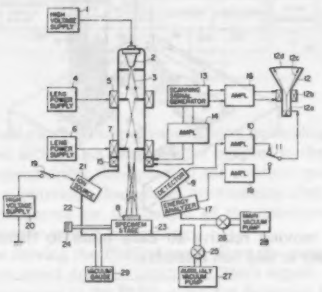
Shinjiro Katagiri, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 27, 1978, Ser. No. 872,762

Claims priority, application Japan, Feb. 9, 1977, 52-13835; Feb. 10, 1977, 52-13015

Int. Cl.[2] H01J *37/16*

U.S. Cl. 250—441 **9 Claims**



1. Apparatus for irradiating a specimen by an electron beam, comprising means to generate the electron beam and to irradiate the specimen arranged in a specimen chamber, by said electron beam; means to evacuate said specimen chamber, said means including a nonvaporative bulk getter vacuum pump so as to maintain a steady vacuum of said specimen chamber by only said nonvaporative bulk getter vacuum pump; and means to activate said nonvaporative bulk getter vacuum pump.

4,139,775

RADIOGRAPHY

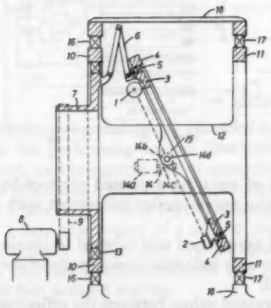
Anthony M. Williams, Iver, England, assignor to EMI Limited, Hayes, England

Filed Jul. 18, 1977, Ser. No. 816,686

Claims priority, application United Kingdom, Jul. 28, 1976, 31365/76

Int. Cl.[2] G01T *1/20*; G01M *23/00*

U.S. Cl. 250—445 T **5 Claims**



1. A scanning structure for scanning a source of radiation around a patient during a radiographic examination of the patient, the structure comprising:

a static main frame having an annular portion surrounding an aperture in which the patient's body is disposed; a frame member having an annular flange coaxial with, and of smaller radius than, said annular portion, a first lockable bearing disposed between said flange and said annular portion of said main frame, an annular ring member coaxial with, and of smaller diameter than, said annular flange, a second lockable bearing disposed between said ring member and said flange, the axes of said ring member, said flange and said annular portion of said main frame extending longitudinally of said patient's body, an outer tilt frame of annular form pivotally mounted to said ring member, an inner tilt frame, also of annular form, disposed within said outer tilt frame and supporting said source, a third lockable bearing disposed between said inner and outer tilt frames and a drive link extensible in the direction of said axes but substantially rigid in a direction tangential of the scanning movement coupling said inner tilt frame to said ring member; the inner tilt frame encircling the patient's body, means for causing said ring member to rotate, about its axis, around the patient's body, causing said inner tilt frame to rotate therewith by means of said drive link at an attitude dependent upon the pivotal position, relative to said frame member, adopted by said outer tilt frame, and means for selectively locking one or more of said lockable bearings, in dependence upon the motion, relative to the patient, required of said source.

4,139,776

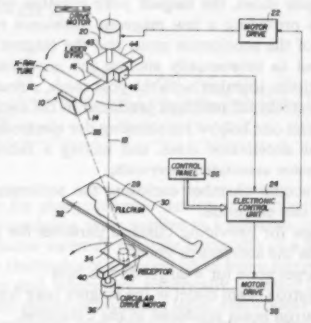
SYSTEM FOR CIRCULAR AND COMPLEX TOMOGRAPHY

Melbourne J. Heilstrom, Severna Park, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Filed Sep. 22, 1977, Ser. No. 835,738

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—445 T **23 Claims**



1. A method for non-mechanically linking the motion of an X-ray source unit with an X-ray receptor unit during a tomographic procedure comprising the steps of:

effecting motion of one of said units in an angular displacement path about an axis passing through a predetermined fulcrum point intermediate the source unit and the receptor unit;

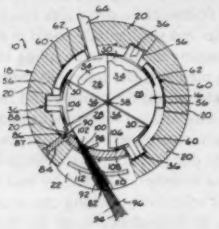
sensing the means of radiant energy a parameter which is a function of the angular displacement of said one unit about said axis and generating a parameter signal therefrom;

generating a command signal in response to said parameter signal and applying said command signal to said other unit for effecting an in-line position through said fulcrum point relative to said one unit on the opposite side of said axis and causing said other unit to effect angular displacement in synchronism with said one unit in mutually parallel planes on the opposite side of said fulcrum point.

4,139,777
CYCLOTRON AND NEUTRON THERAPY INSTALLATION INCORPORATING SUCH A CYCLOTRON

Willem L. Rautenbach, 18 Unie Ave., Stellenbosch, Cape Province, South Africa

Filed Nov. 3, 1976, Ser. No. 738,483
Claims priority, application South Africa, Nov. 19, 1975, 75/7266
Int. Cl.[2] G21G 4/02
U.S. Cl. 250—499 28 Claims



1. A light, compact cyclotron suitable for use in neutron therapy, and capable of being moved to change the direction of an exiting neutron beam comprising:

(a) a pair of opposed, spaced pole shoes having their adjacent inner surfaces defining an accelerator zone, the surfaces being adapted to constitute magnetic equipotential surfaces which establish a magnetic field configuration for the cyclotron during use,

(b) an electromagnetic coil system around the pole shoes and adapted for connection to an electrical power source for generating the cyclotron magnetic field between the pole shoe surfaces,

(c) a magnet yoke to provide a magnetic flux return path for the pole shoes, the magnet yoke together with the pole shoes providing a low magnetic resistance relatively to that of the accelerator zone, and the magnet yoke being shaped to substantially enclose the accelerator zone to constitute, together with the pole shoes, a neutron attenuation shield for neutrons produced in the cyclotron,

(d) at least one hollow accelerating dee electrode positioned in the accelerator zone, and having a radio frequency resonator associated therewith,

(e) a vacuum chamber enclosing the acclerator zone and each dee electrode,

(f) means for providing charged particles for acceleration within the accelerator zone,

(g) a target zone for a target device, and

(h) a neutron beam outlet in the magnet yoke for emission of a neutron beam produced in the cyclotron.

4,139,778
SWIVEL BASE FOR FUEL ASSEMBLY STORAGE

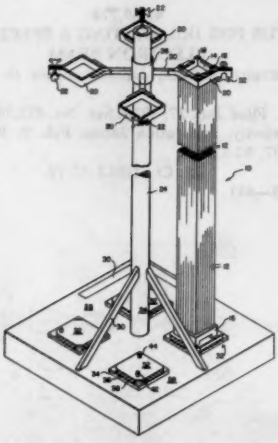
Theodore E. Raymond, Swansea, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 2, 1977, Ser. No. 764,787
Int. Cl.[2] G21F 5/00
U.S. Cl. 250—507 9 Claims

1. A nuclear fuel storage rack comprising:

upper support means for vertically supporting a fuel assembly from said fuel assembly's upper end; and

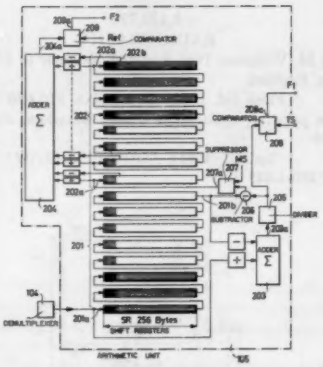
swivel base means having a plurality of members capable of relative motion disposed below said fuel assembly for supporting the lower end of said fuel assembly; said members moving relative to each other to thereby relieve stresses in said fuel assembly.



4,139,779
METHOD OF ASSESSING A PRINTED ARTICLE

Kurt Ehrat, Steinmaur, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Apr. 25, 1977, Ser. No. 790,656
Claims priority, application Switzerland, Apr. 30, 1976, 5451/76
Int. Cl.[2] G06K 5/00
U.S. Cl. 250—556 19 Claims



1. A method of assessing a printed product by point-wise comparison of the sample under assessment with an original, comprising:

scanning said sample and said original to obtain reflectance values from each individual image point of the sample and the original;

forming differential values between the reflectance values of corresponding image points of the sample and the original;

adding, with the predetermined weighting, to the differential value of each image point the differential values of the image points adjacent to the respective image point to obtain added differential values for each image point;

comparing said added differential values with a predetermined threshold; and,

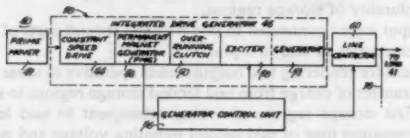
assessing the sample as faulty if the absolute amount of said added differential values exceeds said threshold at least in one image point.

4,139,780

MULTI-CHANNEL GENERATOR DRIVE SYSTEM

David J. Hucker, and Timothy F. Glennon, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 17, 1977, Ser. No. 853,232
Int. Cl.² H02J *4/00*
U.S. Cl. 307—86 **7 Claims**



7. In a multi-channel constant speed drive generating system, each channel including a prime mover coupled to the input of a constant speed drive, the output of the constant speed drive coupled to a generator through an overrunning clutch, a line contactor connected on the output of the generator, and a PMG, the improvement comprising:

means for driving the PMG directly from the output of the constant speed drive to produce a PMG signal;

means responsive to the PMG signal for detecting an underspeed condition; and

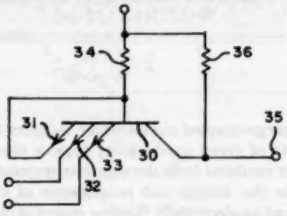
means responsive to the underspeed condition for opening the line contactor.

4,139,781

LOGIC GATE CIRCUITS

David E. Fulkerson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 685,563, May 12, 1976, abandoned, which is a division of Ser. No. 497,018, Aug. 13, 1974, Pat. No. 3,970,866. This application Apr. 13, 1978, Ser. No. 895,833
Int. Cl.² H01L *27/04*
U.S. Cl. 307—213 **1 Claim**



1. A monolithic integrated circuit provided in a semiconductor material for performing logical functions including an AND function, said integrated circuit comprising:

a plurality of isolated regions in said semiconductor material, each of a first conductivity type, including a first isolated region; a first base region of a second conductivity type located entirely within said first isolated region, there being a first base junction between said first base region and said first isolated region;

a first plurality of emitter regions of said first conductivity type, each located within said first base region, including first and second emitter regions, there being first and second emitter junctions between said first and second emitter regions and said first base region, respectively;

a first double contact interconnection means made across said first emitter junction between said first emitter region and said first base region, said double contact and interconnection means being in ohmic contact with both said first base region and said first emitter region;

a first set of ohmic emitter contacts in addition to said first double contact and interconnection means, such made to one of said first plurality of emitter regions and each made by emitter interconnection lead means, including a first emitter contact made to said second emitter region, said emitter interconnection lead means being capable of transmitting signals from a source;

an ohmic first collector contact made to said first isolated region;

a first resistive means connecting said first double contact and interconnection means with a first voltage supply interconnection lead means adapted for energization from a voltage supply, said first resistive means being provided by said semiconductor material in said first isolated region; and

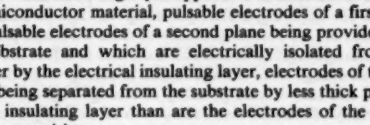
a second resistive means connecting said first collector contact and a second voltage supply interconnection lead means adapted for energization from a voltage supply, said second resistive means being provided by said semiconductor material in said first isolated region with said first and second voltage supply interconnection lead means being a joint voltage supply interconnection means having an ohmic contact to said first isolated region, whereby an integrated circuit logic gate capable of performing said AND function is provided by use of a noninverting transistor.

4,139,782

REGENERATOR STAGE FOR CCD ARRANGEMENTS

Ulrich Ablassmeier, Waltenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 27, 1976, Ser. No. 726,672
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543615
Int. Cl.² G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D **13 Claims**



1. A stage for charge-coupled device arrangements having an electrical insulating layer applied to a substrate comprised of semiconductor material, pulsable electrodes of a first plane and pulsable electrodes of a second plane being provided over the substrate and which are electrically isolated from one another by the electrical insulating layer, electrodes of the first plane being separated from the substrate by less thick portions of the insulating layer than are the electrodes of the second plane, comprising:

(a) a diffusion zone in the substrate which is of opposite conductivity type as compared to the semiconductor substrate of a given conductivity type, and a first potential connected to said diffusion zone;

(b) in the first plane next to said diffusion zone a first electrode being arranged, and a signal voltage from an output stage of a charge coupled device arrangement connected to the first electrode;

(c) next to the first electrode in the second plane a largearea, second electrode of area larger than the first electrode being arranged, and a second constant potential connected to the second electrode;

(d) next to the second electrode in the first plane a third electrode being arranged, and a reference voltage connected to the third electrode;

(e) next to the third electrode in the second plane a fourth

electrode being arranged, and a third constant potential connected to the fourth electrode;

(f) next to the fourth electrode in the first plane a fifth electrode being arranged, and a fourth potential connected to the fifth electrode; and

(g) the diffusion zone and electrodes of the stage being located near said pulsable electrodes.

4,139,783

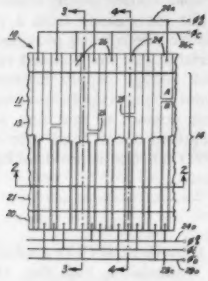
SINGLE PHASE SIGNAL PROCESSING SYSTEM UTILIZING CHARGE TRANSFER DEVICES

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 609,416, Sep. 2, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,200

Int. Cl.[2] G11C *19/28;* H01L *29/78;* H03H *7/28*

U.S. Cl. 307—221 D **1 Claim**



1. Charge transfer apparatus comprising

a substrate of semiconductor material of one conductivity type,

a first plurality of electrodes insulatingly overlying said substrate, each split into a first and a second part with a separation therebetween,

a second plurality of electrodes insulatingly overlying said substrate, each spaced adjacent said first and second parts of a respective electrode of said first plurality,

means for connecting the first part of said electrodes of said first plurality to a first clock line,

means for connecting the second parts of said electrodes of said first plurality to a second clock line,

means for coupling a first fixed voltage to said first and second clock lines to form a first plurality of storage regions in said substrate, said coupling means maintaining said clock lines at a substantially fixed potential,

means for applying a first pulsating voltage to said electrodes of said second plurality to form a second plurality of storage regions in said substrate and to effect the transfer of charge from storage region to storage region of said first and said second plurality of storage regions,

a plurality of transfer electrodes, each insulatingly overlying a respective adjacent pair of electrodes of said first plurality and said second plurality of electrodes, alternate ones of said transfer electrodes being interconnected to form a first plurality and a second plurality of transfer electrodes, means for applying a second fixed voltage to said first plurality of transfer electrodes, means for applying a second pulsating voltage to said second plurality of transfer electrodes, means for synchronizing said first and second pulsating voltages, said second fixed voltage being of a value in relation to said first fixed value of voltage and the levels of said second pulsating voltage to permit transfer of charge in one direction from said second plurality of storage regions to said first plurality of storage regions, and the levels of said second pulsating voltage being set in relation to the levels of said first pulsating voltage to permit transfer of charge in said one direction from storage regions of said first plurality to storage regions of said second plurality under the control of the level of potential on said second plurality of transfer electrodes,

the time of transition in level of said second pulsating voltage in a cycle thereof from a level which permits the transfer of charge from said first plurality of storage regions to said second plurality of storage regions to a level which inhibits such transfer being set to occur prior to the time of transition in level of said first pulsating voltage in a cycle thereof from a level enabling said second plurality of storage regions to receive charge from said first plurality of storage regions to a level enabling said second plurality of storage regions to transfer charge to said first plurality of storage regions,

output means connected to said first and second parts of the electrodes of said first plurality,

means for rendering said output means operative to sense the transfer of charge from said second storage regions to said first storage regions at a time subsequent to said level transition time of said second pulsating voltage and prior to said level transition time of said first pulsating voltage in a cycle thereof.

4,139,784

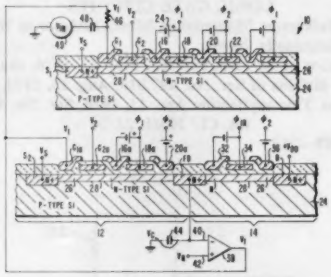
CCD INPUT CIRCUITS

Donald J. Sauer, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 2, 1977, Ser. No. 821,318

Int. Cl.[2] G11C *19/28;* H01L *29/78*

U.S. Cl. 307—221 D **30 Claims**



1. In a charge-coupled circuit which includes a semiconductor substrate of given conductivity type, a plurality of electrode means insulated from the substrate responsive to applied voltages for the storage and propagation of charge in said substrate, and an electrically floating region in the substrate of different conductivity type than the substrate, in combination:

means for supplying a controllable amount of charge to said region;

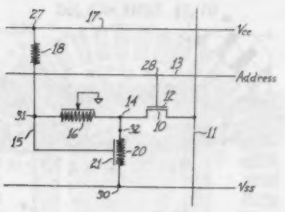
means including a number of said electrode means for removing from said region, during each of a plurality of spaced time intervals, a fixed quantity of charge, that is, an amount of charge which is of substantially the same magnitude from one time interval to the next; and

feedback circuit means for adjusting the controllable amount of charge supplied to said region to be equal to the charge removed from that region so as to tend to maintain said floating region at a relatively constant average voltage level, said feedback circuit means including means responsive to said average voltage level at said floating region for applying a direct voltage bias at a level proportional to said average voltage level to said means for supplying a controllable amount of charge.

4,139,785
STATIC MEMORY CELL WITH INVERTED FIELD EFFECT TRANSISTOR

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1977, Ser. No. 801,695
Int. Cl.[2] G11C *11/40;* H03K *3/353*
U.S. Cl. 307—238 12 Claims

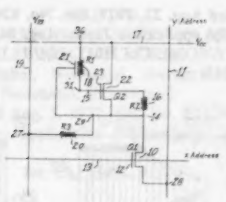


1. A semiconductor integrated circuit comprising an MOS transistor having a source-drain path and a gate, the source-drain path being connected between a first node and a source of logic levels, the gate of the transistor being connected to a different source of logic levels, a second node, resistance means connecting the second node to a voltage supply, an impedance element connecting the first node to the second node, the impedance element exhibiting a low impedance state when the voltage on the first and second nodes is at a first level and exhibiting a high impedance state when the voltage on the first and second nodes is at a second level, the second level being a higher voltage than the first level, and voltage-responsive impedance means having a current path and a control electrode, the current path connecting the first node to reference potential, the control electrode of the impedance means being connected to the second node.

4,139,786
STATIC MOS MEMORY CELL USING INVERTED N-CHANNEL FIELD-EFFECT TRANSISTOR

Joseph H. Raymond, Jr., and Keith H. Gudger, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1977, Ser. No. 801,694
Int. Cl.[2] G11C *11/40*
U.S. Cl. 307—238 10 Claims

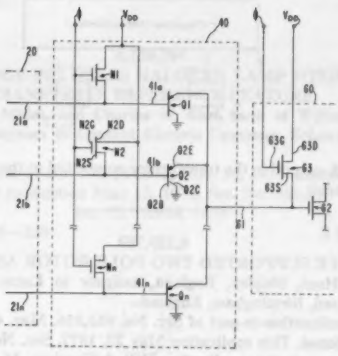


1. A semiconductor integrated circuit comprising first and second MOS transistors each having a source-drain path and a gate, the source-drain path of the first transistor being connected between a first node and a source of logic levels, the gate of the first transistor being connected to a different source of logic levels, the source-drain path of the second transistor being connected between the first node and a voltage supply, the gate of the second transistor being connected to a second node, means exhibiting substantial impedance connecting the first node to the second node, an impedance element connecting the second node to the voltage supply, the impedance element exhibiting a low impedance state when the voltage on the first node is of a first level and exhibiting a high impedance state when the voltage on the first node is of a second level, the first level being substantially different in voltage from the second level, and impedance means connecting the first node to reference potential.

4,139,787
LINE-ADDRESSABLE RANDOM-ACCESS MEMORY DECOUPLING APPARATUS

Gilbert F. Amelio, Saratoga, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 11, 1977, Ser. No. 840,871
Int. Cl.[2] G11C *7/00;* H03K *5/18*
U.S. Cl. 307—264 11 Claims



1. A decoupling circuit for decoupling a comparator circuit from signals presented on a plurality of output lines wherein said decoupling circuit comprises:

a first plurality of transistors each having a first terminal connected to a different one of the output lines and each having a second terminal connected to the comparator circuit; and

a second plurality of transistors each having a first terminal connected to a different one of the first plurality of transistors.

4,139,788
TEST CIRCUIT FOR INDICATION OF DEVIATION OF SOURCE VOLTAGES FROM THEIR SET POINTS

Josef Cibulka, Prague; Jaroslav Hlousek, Prague; Richard Jelínek, Prague; Jan Krtek, Karlovy Vary, and Jiří Winkler, Prague, all of Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Jun. 23, 1977, Ser. No. 809,431
Int. Cl.[2] H03K *5/18*
U.S. Cl. 307—350 2 Claims

1. A test circuit for determination of zero electrical current for a plurality of N source elements, comprising

N adapter circuits each having its input connected to the corresponding source element and each having one output for producing an output current in response to a deviation from the zero electrical current condition in that source element;

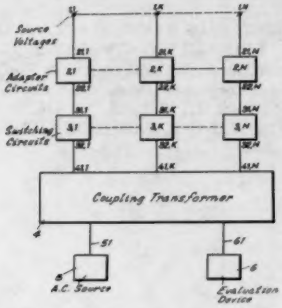
N connecting circuits each having an input connected to the output of the corresponding adapter circuit, so as to change the impedance of the output of the connecting circuit in response to the output current of the corresponding adapter circuit;

a coupling transformer;

N short circuit coils in the transformer, each coil being connected to the output of one corresponding connecting circuit;

an auxiliary signal source;

an auxiliary input coil in the transformer connected to the auxiliary signal source;
an evaluation circuit; and



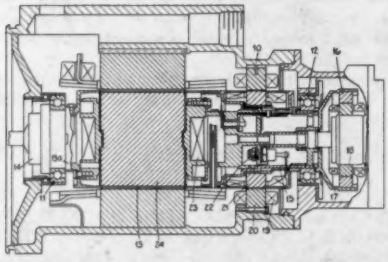
a pick-up coil in the transformer connected to the evaluation circuit.

4,139,789

SLEEVE SUPPORTED TWO POLE ROTOR ASSEMBLY

Peter Hunt, Shipley, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation-in-part of Ser. No. 663,936, Mar. 4, 1976, abandoned. This application May 23, 1977, Ser. No. 799,835
Claims priority, application United Kingdom, Mar. 6, 1975, 9289/75; May 4, 1977, 3962/77
Int. Cl.[2] H02K *1/22*
U.S. Cl. 310—40 R **16 Claims**



1. A rotary electrical machine having a housing, a rotor member comprising a body of magnetizable material, a rigid sleeve of non-magnetic material surrounding said rotor member and supporting the latter, means for rotatably supporting said sleeve in said housing, a first winding lying in a generally diametral plane of said rotor member, and passage means for permitting a fluid to flow within said sleeve from one axial end of said rotor member to the other axial end thereof, said passage means being provided by openings in said rotor member body.

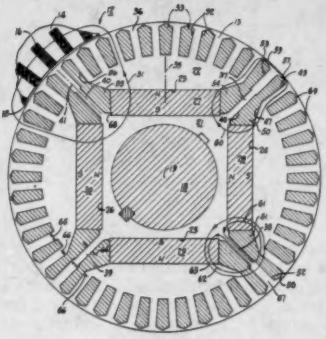
4,139,790

DIRECT AXIS AIDING PERMANENT MAGNETS FOR A LAMINATED SYNCHRONOUS MOTOR ROTOR

Charles R. Steen, Novelty, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Aug. 31, 1977, Ser. No. 829,269
Int. Cl.[2] H02K *21/12*
U.S. Cl. 310—156 **40 Claims**

1. A rotor for a permanent magnet synchronous motor having a stator developing a rotating direct axis flux comprising, in combination,
a shaft journalled about an axis,
magnetically permeable inner and outer portions of said rotor defining a plurality of magnet apertures,
a plurality of magnets in said magnet apertures,
said inner portion lying between said magnets and said shaft and said outer portion lying between said magnets and the outer periphery of said rotor,
said magnets being magnetized to establish an even plurality



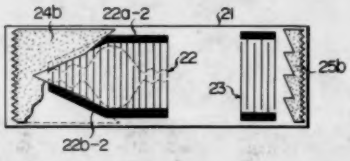
of magnetic poles on the periphery of said rotor by the flux of said magnets and with the flux of said magnets being additive to the direct axis flux of the stator at no load,
and a plurality of reinforcing ribs disposed substantially along the magnetically neutral axes intermediate the magnetic poles mechanically interconnecting said inner and outer portions for resisting centrifugal force on said outer portion during rotation.

4,139,791

DAMPING STRUCTURE FOR ELASTIC SURFACE WAVE DEVICE

Akira Yamada, and Hitoshi Suzuki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 22, 1977, Ser. No. 826,837
Claims priority, application Japan, Aug. 24, 1976, 51-100253
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—313 **9 Claims**



1. An elastic surface wave device comprising a piezoelectric substrate; interdigital type input and output transducers provided on one surface of the piezoelectric substrate and mutually spaced apart from each other to define a surface wave propagation path therebetween; and a surface wave absorber partially overlappingly provided on that end surface portion of at least one of the input and output transducers which lies on an extension of the surface wave propagation path, said surface wave absorber having end edges diagonally intersecting with respect to the surface wave propagation path.

4,139,792

HIGH VOLTAGE GENERATING DEVICE

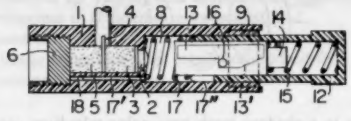
Kaneichi Kondo, Settsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 695,401, Jun. 14, 1976. This application Dec. 15, 1977, Ser. No. 860,997

Claims priority, application Japan, Jun. 19, 1975, 50-84352; Apr. 20, 1976, 51-49741; Jun. 20, 1975, 50-85489; May 19, 1976, 51-64503

Int. Cl.² H01L *41/10*

U.S. Cl. 310—339 10 Claims



1. A high voltage generating device comprising an outer housing of insulating material in which two piezoelectric elements are housed; an electrical contact element mounted between and in contact with respective first end surfaces of said piezoelectric elements; a metal abutment and a metal receptacle member provided in said outer housing in contact with respective second end surfaces of said piezoelectric elements; an inner housing supporting an electrically conductive hammer for imparting an impact force to said metal abutment, said inner housing being slidably supported in a space within said outer housing and containing a bore with sloped portion formed in a side surface thereof; an electrically conductive spring in electrical contact with said hammer and mounted in said outer housing for biasing said inner housing outward of said outer housing, said spring having an end portion which is straight and in parallel with the longitudinal axis of said spring, said straight end portion passing through a hole in said outer housing and making electrical contact with said metal receptacle member, said outer housing containing an L-shaped cam groove formed on an inner wall thereof opened to an open end of said outer housing; a frame housing an opening through which said inner housing extends fixed over the opening of said outer housing to close the opening of said L-shaped groove and to close in conjunction with said inner housing the open end of said outer housing; and a pin mounted on said hammer, a tip end of said pin passing through said bore and engaging with said L-shaped cam groove of said outer housing.

4,139,793

INTEGRAL RESONANT SUPPORT ARMS FOR PIEZOELECTRIC MICRORESONATORS

Jean-Georges Michel, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Aug. 5, 1977, Ser. No. 822,334

Claims priority, application Switzerland, Sep. 14, 1976, 11645/76

Int. Cl.² H01L *41/10*

U.S. Cl. 310—353 10 Claims

1. A microresonator comprising a flat resonant part and two suspension arms disposed in a plane parallel to the plane of said resonant part, one of the ends of each of said arms being adapted to be fixed on a stiff support and said resonant part being provided on its two principal sides with electrodes to stimulate the vibrations, said electrodes being extended by connection leads associated to said arms, said resonant part being cut from a piezoelectric material so as to oscillate according to a vibration resulting from the superposition of a principal extensional longitudinal mode of oscillation, said resonant part also being subjected to a first shear coupled mode of oscillation and a second extensional transversal coupled mode of oscillation, said resonant part being attached to said arms approximately at the point of intersection of a nodal plane of the vibration resulting of the superposition of said principal mode and said first coupled mode with lateral sides of said resonant part, so that said arms are only bound to vibrate according to said second coupled mode of oscillation, said arms being fixed on said stiff support at a node of said vibration of said arms.

4,139,794

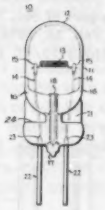
WEDGE-PIN GLASS HALOGEN LAMP WITH TRANSVERSE REFERENCE FEATURE

Robert N. Malm, and Charles W. Cox, both of Willoughby, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 745,045, Nov. 26, 1976, abandoned. This application May 15, 1978, Ser. No. 906,177

Int. Cl.² H01K *1/28*

U.S. Cl. 313—220 3 Claims



1. A glass-halogen incandescent lamp comprising:

an envelope comprising an aluminosilicate glass and having a rounded end and a sealed end;

at least one refractory metal filament positioned within said envelope;

at least two lead wires, each having a first and a second end, the first ends of which are connected to said filament;

a fill gas comprising a halide;

at least two contact pins, each having a first and a second end, the first end of each being welded to respective second ends of said lead wires, said first ends of said contact pins being located within the glass comprising said sealed end; said contact pins being of a predetermined length for locating the filament with respect to said second ends of said contact pins, said second ends of said contact pins being outside said lamp; and

a transverse reference feature in said sealed end by which said lamp may be securely held.

4,139,795

TELEVISION CAMERA TUBE

Marino G. Carasso, and Paulus P. M. Schampers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1977, Ser. No. 758,476

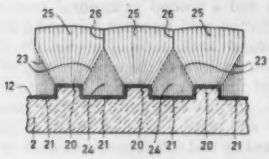
Claims priority, application Netherlands, Jan. 16, 1976, 7600425

Int. Cl.² H01J *29/45, 31/38*

U.S. Cl. 313—384 10 Claims

1. A television camera tube, comprising an electron source, a target positioned to be scanned by an electron beam from said source and having a photoconductive layer and a signal electrode in contact with said photoconductive layer, the photoconductive layer having a plurality of regions each having at least one transverse dimension which corresponds in order of

magnitude to, but is not larger than, a transverse dimension of an image point in the layer, said regions being at least partly separated from each other by wall transitions having a relatively large contact resistance which transversely intersect and divide the photoconductive layer into a structure which impedes charge transport between different image points.



4,139,796

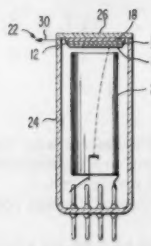
PHOTOCONDUCTOR FOR IMAGING DEVICES

Albert Rose, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 513,392, Oct. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 423,454, Dec. 10, 1973. This application Feb. 26, 1976, Ser. No. 661,614

Int. Cl.[2] H01J *29/45, 31/38*

U.S. Cl. 313—385 **9 Claims**



1. A camera tube having an envelope with a transparent portion, a target mounted within said envelope for receiving a light image transmitted through said transparent portion, and an electron beam forming and scanning means for scanning an electron beam across an exposed surface of the target, said target comprising:

a light receiving photoconductive body of a semiconductor material having opposed surfaces, one of said opposed surfaces facing the electron beam; and a layer of a solid insulator material on the surface of said body facing the electron beam, approximately 100A to 1000A thick, and having a surface which is the surface of the target exposed to the scanning electron beam; said insulator material having from about 10^{14} to 10^{19} carriers per cubic centimeter substantially at or further removed from the conducting band appropriate to the polarity of the carriers; the mobility of said carriers being about 10^{-6} to 10^{-12} cm^2 per volt second; said insulator material having a resistivity along said layer, in a direction of scan of the electron beam, of from about 10^{12} ohms per square to about 10^{18} ohms per square and said layer forming a blocking contact along an interfacing region with said body whereby a charge may be accumulated along a portion of said layer abutting said semiconductor material and retained for a period of time exceeding 1/10 of a second substantially as a charge replica of a light image impinging upon said target.

4,139,797

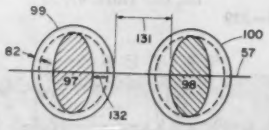
COLOR TELEVISION SCREEN AND SHADOW MASK ASSEMBLY HAVING INCREASED TOLERANCE TO RADIAL REGISTRATION ERRORS

William A. Rowe, Palatine, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 1, 1977, Ser. No. 812,035

Int. Cl.[2] H01J *29/07, 29/32, 31/20*

U.S. Cl. 313—408 **5 Claims**



1. For use in a shadow mask type color television picture tube having a funnel and a faceplate attached to the mouth of said funnel wherein said faceplate has an electron excitable phosphor screen having triads of red, green and blue phosphor elements deposited thereon and an apertured shadow mask in spaced adjacency to said phosphor screen and wherein said funnel has a neck containing an elecron gun assembly for forming three electron beams, said apertures in said shadow mask forming beam landing areas on said phosphor elements when said electron beams pass through said apertures, a system for increasing color purity tolerance and leaving tolerance in at least a portion of a predetermined sector of the phosphor screen and shadow mask assembly to increase tolerance to radial registration errors between said electron beam landing areas and said phosphor elements due to shadow mask doming during operation of said tube, the geometry of said beam landing areas and phosphor elements in said portion of said sector being characterized by having off the tube axis the smaller ones of said phosphor elements and said mask apertures radially compressed relative to the larger ones without a corresponding azimuthal compression, and said radial compressing increasing with increasing radius such that said tolerance in the radial direction increase off-axis without a corresponding increase in azimuthal tolerance, thus providing increased radial tolerance to the aforesaid doming-induced radial registration errors between the phosphor elements and the beam landing areas without unncessarily providing a commensurate increase in azimuthal tolerance which would result in wasted picture brightness.

4,139,798

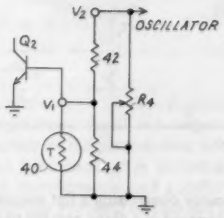
TEMPERATURE COMPENSATION CIRCUIT FOR IMAGE INTENSIFIERS

Alan W. Hoover, Hollins, Va., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Continuation of Ser. No. 646,698, Jan. 6, 1976, abandoned. This application May 9, 1977, Ser. No. 795,262

Int. Cl.[2] H01J *31/26;* **G05F** *1/58*

U.S. Cl. 315—10 **6 Claims**



1. In an image intensifier power supply for providing power to an image intensifier having a microchannel plate, a compensation circuit comprising:

power control transistor regulator means for regulating input power to said image intensifier, including means for sensing the current applied to said microchannel plate and means for varying the voltage applied to said microchannel plate in accordance with a first non-linear compensation voltage in response to said sensed current;

voltage divider means for deriving a second non-linear compensation voltage to compensate for non-linear variation in microchannel plate light gain with temperature variations in said microchannel plate, said voltage divider means including at least one negative voltage-temperature element for varying said second compensation voltage in response to temperature variations; and

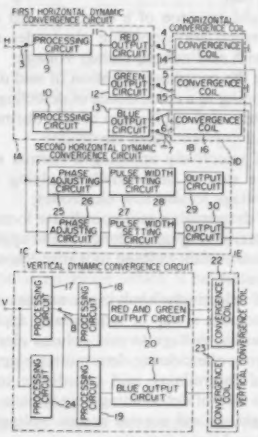
means for transformer coupling said input power to said image intensifier after regulation by said first and second compensation voltage.

4,139,799

CONVERGENCE DEVICE FOR COLOR TELEVISION RECEIVER

Takeshi Kureha, Hirakata, and Taiichi Saeki, Katano, both of Katano., Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 23, 1977, Ser. No. 799,361
Claims priority, application Japan, May 25, 1976, 51-60929
Int. Cl.² H01J *29/51*
U.S. Cl. 315—13 C **10 Claims**



1. A convergence device for a color television receiver capable of enlarging part of a picture focused on a screen, comprising:

a first horizontal dynamic convergence circuit adapted to effect the convergence adjustment with parabolic current, and

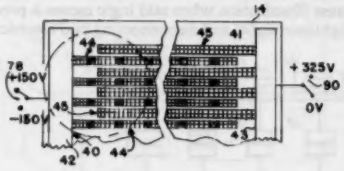
a second horizontal dynamic convergence circuit adapted to effect the convergence adjustment with part of a sinusoidal current, whereby convergence coil means through which convergence current flows when part of a picture is enlarged are connected through switch means to said second horizontal dynamic convergence circuit.

4,139,800

BISTABLE STORAGE TARGET HAVING INTERDIGITATED TARGET ELECTRODE FOR SELECTIVE ERASURE

Bruce H. Ostermeier; Duane A. Haven, both of Portland, and Gordon M. Sletmoe, Tualatin, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 27, 1977, Ser. No. 810,349
Int. Cl.² H01J *29/50, 31/00*
U.S. Cl. 315—13 ST **15 Claims**



1. A cathode ray storage tube apparatus for storing written information, comprising:

an evacuated envelope;

a storage target secured onto said evacuated envelope including an insulative support member having first electrode means including spaced first electrode members extending along an inside surface of said support member and second electrode means including spaced second electrode members extending along said inside surface in interdigitated relationship with respect to said spaced first electrode members of said first electrode means, a layer of storage dielectric material provided onto said support member over said inside surface and said interdigitated electrode members, collector electrode means provided by said first electrode members of said first electrode means;

writing means mounted within said envelope for bombarding said storage level with a writing beam of high velocity electrons including means for deflecting said writing beam across said storage target to produce an electron image in accordance with input information on said storage dielectric layer corresponding to the input information;

holding means mounted within said envelope for bombarding said storage target substantially uniformly with low velocity electrons which cause secondary electrons to be emitted from said electron image and said secondary electrons being collected by said collector electrode means thereby causing said electron image to be stored bistably for an indefinite controllable time on said storage dielectric layer; and

selective erasing means connected to said holding means, said second electrode means, said writing means and said deflecting means for turning off said holding means during a period that selective erasing of stored information takes place, for raising said second electrode means to a predetermined potential, for activating said writing means to bombard said storage target with an erasing beam of electrons and for controlling said deflecting means to deflect said erasing beam of electrons to a selected area of said storage target thereby erasing the portion of said electron image that is stored in said selected area.

4,139,801

AUTOMATIC AUTOMOBILE LIGHT CONTROL SYSTEM

Raul F. Linares, 1101 NW. 19 Ave., Miami, Fla. 33125

Filed Jan. 26, 1977, Ser. No. 762,816
Int. Cl.² B60Q *1/02*
U.S. Cl. 315—83 **17 Claims**

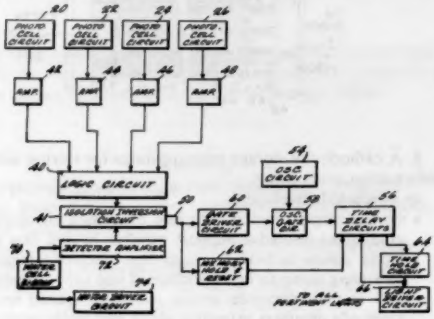
1. A system for automatically turning automobile lamps on and off in accordance with ambient light comprising:

a plurality of photo-responsive means each mounted for

receiving ambient light from a different direction and each producing a daytime signal indicating daytime conditions and a nighttime signal indicating nighttime conditions,

logic means connected to said photo-responsive means for producing a first output signal when all of said photo-responsive means are producing said daytime signal and producing a second output signal when at least one of said photo-responsive means is producing said nighttime signal, and

circuit means connected to said logic means and said lamps for connecting an electrical potential to said lamps to cause illumination when said logic means is producing said nighttime signal and disconnecting said electrical potential



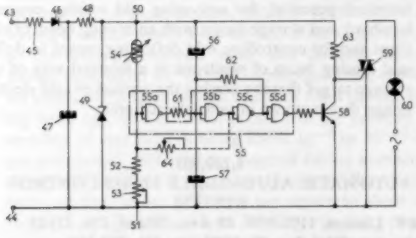
from said lamps when said logic means is producing said daytime signal wherein said circuit means includes delay means for connecting said lamps after a given delay one if said nighttime signal continues during said delay, said delay means including an oscillator circuit, counter circuit means for producing an output signal upon counting a predetermined count, gate means connected to said logic means and connecting said oscillator circuit to said counter circuit for passing pulses from said oscillator circuit to said counter circuit means, and further logic means connecting the output of said counter means to said lamps for causing said lamps to be connected to said potential when said counter produces said output signal.

4,139,802

LIGHT-RESPONSIVE ELECTRIC SWITCH

Guy Dubot, and Jacques Lemercier, both of Saverne, France, assignors to Fabrique d'Horlogerie la Vedette, S.A., Saverne, France

Filed Jun. 21, 1977, Ser. No. 808,693
Claims priority, application France, Jan. 31, 1977, 77 03398
Int. Cl.[2] H05B *37/02, 39/04*
U.S. Cl. 315—151 **4 Claims**



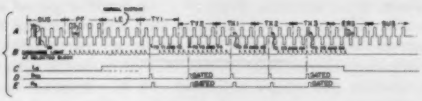
1. A twilight-responsive switch, comprising an electronic circuit comprising a voltage divider including a fixed resistor, a potentiometer allowing adjustment of the sensitivity, and a variable resistor constituting a photoresistance, a standard integrated circuit of the CMOS technology provided with four NAND gates, a delay circuit formed by two capacitors and a resistor, and an output stage comprising a transistor in the collector circuit of which is connected the gate of a triac which controls, as a function of the illumination of the photoresistance, the lighting up or the extinction of a lamp.

4,139,803

METHOD AND APPARATUS FOR DETECTING THE LOCATION OF A LIGHT DETECTING PEN ON A GAS DISCHARGE DISPLAY PANEL

Keizo Kurahashi, Nagoya; Michihiro Shimizu, Akashi; Shizuo Andoh, and Kazuo Yoshikawa, both of Kobe, all of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 12, 1976, Ser. No. 741,419
Claims priority, application Japan, Nov. 12, 1975, 50/136659
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—707 **5 Claims**



1. A method of detecting the coordinate location of a light detecting pen positioned on a gas discharge panel having a matrix arrangement of discharge cells defined by a plurality of row and column electrodes, including the steps of:

selectively applying a write voltage to said row and column electrodes of said gas discharge panel causing discharge in all discharge cells;

selectively applying a normal sustain voltage to said row and column electrodes to maintain said discharges;

providing a light pen for detecting light emitted from said discharge cells;

accessing a desired location on said gas discharge panel with said light pen;

detecting light emission of a discharge cell at said desired position when corresponding electrodes are selectively applied with said normal sustain voltage;

determining the coordinate location of said desired position corresponding to a coincidence of detecting light emission and said selective application of said normal sustain voltage to said corresponding electrodes;

said step of selectively applying a normal sustain voltage includes a step of sequentially applying a first normal sustain voltage to said row electrodes;

said step of determining said coordinate location includes a step of determining coincidence of the application of said first normal sustain voltage to a row electrode with said light detection;

said step of selectively applying a normal sustain voltage further includes a step of sequentially applying a second normal sustain voltage to said column electrodes following said row coincidence determining step; and

said step of determining said coordinate location further includes a step of determining coincidence of the application of said second normal sustain voltage to a column electrode and light detection.

4,139,804

TRANSIENT MODULATED IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

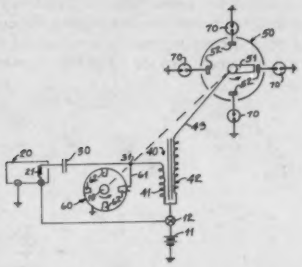
Filed Jul. 11, 1977, Ser. No. 814,457
Int. Cl.[2] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **10 Claims**

1. An ignition system including an ignition transformer which has a primary winding and a secondary winding, comprising the combination of:

means, connected to the primary winding, for precharging the primary winding during a first mode of operation of

the system and for initiating a transient signal during a second mode of operation of said system; and

an AC source, electrically coupled to the primary winding



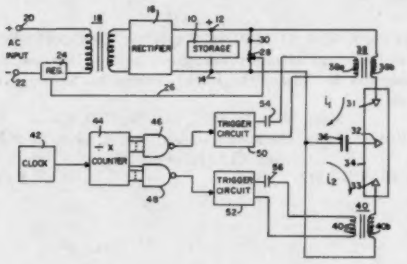
and the means, for providing a generally rectangular waveform to the primary winding and for intermodulating said rectangular waveform with said transient signal during said second mode of operation.

4,139,805

MULTIFLASH SYSTEM

Robert J. Cosco, Amesbury, and Jeffrey D. Ingalls, Ipswich, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 29, 1977, Ser. No. 865,404
Int. Cl.[2] H05B *41/34*
U.S. Cl. 315—241 R **8 Claims**



1. A multiflash system comprising, in combination:

an arc discharge flash lamp having an elongated, light-transmitting tubular envelope which is hermetically sealed, a rare gas in said envelope, and first, second and third electrodes in said envelope;

a supply voltage source comprising a direct current storage means having first and second terminals of opposite polarity connected across the first and third electrodes, respectively, of said lamp;

a storage capacitor means connected between the second electrode of said lamp and the second terminal of said source, whereby said first and second lamp electrodes and said capacitor means are series connected across said supply voltage source; and

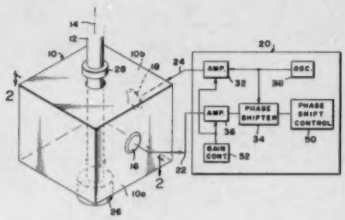
means coupled to said flash lamp for successively applying high voltage trigger pulses thereto, one of said trigger pulses effecting an arc path between first and second electrodes for charging said capacitor means through said lamp, and the next following of said trigger pulses effecting an arc path between said second and third electrodes for discharging said capacitor means through said lamp, said charge and discharge producing trigger pulses being applied in alternate sequence to said flash lamp.

4,139,806

ACOUSTIC DRIVING OF ROTOR

Hilda Kanber; Isadore Rudnick, both of Los Angeles, and Taylor G. Wang, Glendale, all of Calif., assignors to The United States of America as represented by the Administrator National Aeronautics & Space Administration, Washington, D.C.

Filed Jul. 5, 1977, Ser. No. 812,447
Int. Cl.[2] H02N *11/00*
U.S. Cl. 318—116 **6 Claims**



1. Apparatus for rotating a body comprising:

a chamber with first and second perpendicular walls, for surrounding at least a portion of said body;

first and second transducers positioned to emit sound from said first and second walls, respectively; and

means for driving said transducers;

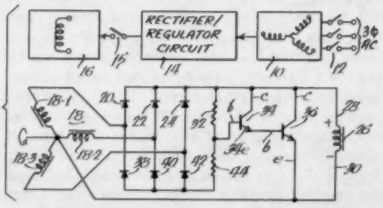
said driving means constructed to drive said first and second transducers at the same frequency but at a closely controlled phase difference controlled to lie within a limited range.

4,139,807

ROTOR SHORT-CIRCUITING SWITCH

David J. Hucker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 12, 1977, Ser. No. 815,068
Int. Cl.[2] H02P *1/50*
U.S. Cl. 318—718 **7 Claims**



1. In a synchronous machine having a main stator winding, an exciter field winding, and a rotor on which is mounted a main field rotor winding and an exciter armature winding, an improved circuit for shorting the main field rotor winding comprising:

a transistor for shorting the main field rotor winding when the voltage across the main field rotor winding is of one polarity;

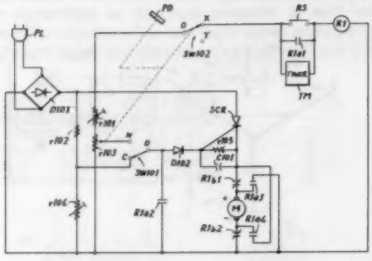
diode means for limiting the voltage across the main field winding when the polarity of the voltage across the main field rotor winding is of the other polarity; and

means for rendering the transistor inoperative when a voltage is received from the exciter armature.

4,139,808
CONTROL APPARATUS FOR ELECTRICALLY DRIVEN SEWING MACHINE

Nobuyoshi Matsumura, Yao, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Moriguchi, Japan

Filed Sep. 9, 1977, Ser. No. 831,869
Int. Cl.[2] H02P 3/10
U.S. Cl. 318—269 7 Claims



1. A control apparatus for an electrically driven sewing machine, comprising

alternate current power source means,

means for rectifying the alternate current output,

a motor adapted to be energized by the output of said rectifying means,

main shaft means adapted to be driven by said motor,

a needle operatively coupled to said main shaft means,

controlled type switching means connected in series with said motor,

means for generating a control signal for controlling said switching means, said control signal generating means including means for adjusting the speed of said motor including a potentiometer, and means for manually actuating said potentiometer of said speed adjusting means,

means operatively coupled to said main shaft means for detecting a predetermined position in the travel of said needle,

means for enabling said needle position detecting means to respond when said manually actuating means is released,

polarity reversing means including control type switching means responsive to the output of said detecting means for reversing the polarity of said motor, whereby continued rotation of said motor provides a counter electomotive force, and

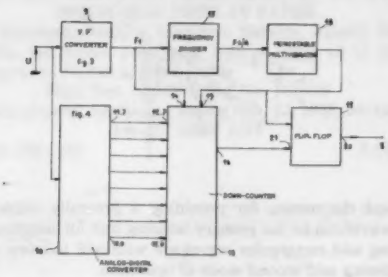
means for applying the counter electromotive force of said motor as a control signal to said controlled type switching means after said polarity reversing means has been actuated, whereby the polarity of said motor is reversed responsive to the output of said detecting means and said switching means is controlled responsive to the counter electromotive force of said motor, the rotation of said motor is abruptly decreased, the counter electromotive force is abruptly diminished, the controlled type switching means is deenergized, and the rotation of the motor is stopped.

4,139,809
D.C. CHOPPER CONTROL DEVICE FOR ELECTRIC MOTORS

Claude Leichle, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 19, 1976, Ser. No. 650,245
Claims priority, application France, Jan. 20, 1975, 75 01588
Int. Cl.[2] H02P 5/06, 5/34, 7/06
U.S. Cl. 318—341 5 Claims

1. A device for controlling the supply of current to a direct-current motor by chopping said direct current by means of a control signal of the "hit or miss" type, wherein the cyclic ratio of said control signal is a linear function of a reference magnitude consisting of a control voltage U, comprising means for providing a reference magnitude comprising a control voltage U, means for generating the frequency of the hit or miss control signal, means for determining the conduction time of said signal, and coupling means for coupling said means for generating the frequency of the hit or miss control signal to the

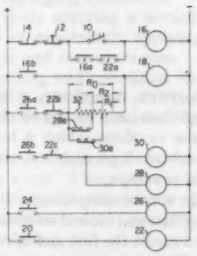


means for determining the conduction time of said signal in such a manner that the cyclic ratio of said signal is a linear function of said reference magnitude, said means for generating the frequency of the hit or miss control signal comprises a voltage-frequency converter receiving said control voltage U at its input, and said means for determining the conduction time of said signal comprising an analog-digital converter receiving said control voltage U at its input and generating a binary number at its outputs.

4,139,810
DEVICE FOR STOPPING PASSENGER CONVEYOR

Yasuo Ueki, and Masaaki Nakayama, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1977, Ser. No. 780,349
Claims priority, application Japan, Apr. 2, 1976, 51-36743
Int. Cl.[2] H01H 47/04
U.S. Cl. 318—372 5 Claims



1. An electromagnetic braking means for a passenger conveyor having an electric motor driving means, said electromagnetic braking means comprising:

an electromechanical brake means having a spring means for normally applying a braking force to said passenger conveyor and an operating winding coupled to said spring means for opposing said spring means and reducing said braking force to a degree related to the current flowing therethrough;

a normal operation current source coupled to said electromechanical brake means for supplying said operating winding with a current to reduce said braking force to zero during the normal operation of the passenger conveyor;

a stop control means coupled to said electric motor driving means and said normal operation current source for deactivating said electric motor driving means and said normal current source when manually actuated;

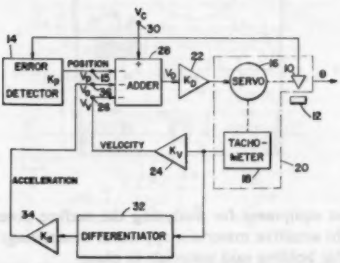
a braking operation current source coupled to said electromechanical brake means for sensing the application of said braking force by said spring means and for supplying a predetermined current to said operating winding upon application of said braking force; and

a stall speed sensor coupled to said braking operation current source for sensing the speed of said passenger conveyor and interrupting the current to said operating winding when the speed of said passenger conveyor is less than a predetermined speed, whereby said braking force is a maximum upon actuation of said stop control means, said braking force has a predetermined magnitude corresponding to said predetermined current during the operation of said braking operation current source and said braking operation current source and said braking force is a maximum when the speed of the passenger conveyor is less than said predetermined speed.

4,139,811
METHOD AND MEANS FOR INCREASING THE STIFFNESS OF LIMITED FREQUENCY SERVO SYSTEMS

Lance T. Klinger, Playa Del Rey, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1976, Ser. No. 735,716
Int. Cl.[2] G05B 5/01
U.S. Cl. 318—615 **3 Claims**



1. In a damped second-order electromechanical servo system including a physical subsystem having a predetermined inertia, said subsystem being maintained in a commanded position by a command torque governed by signals applied to a driving means, and displaced from that position by a disturbance torque, said servo system including position and displacement velocity feedback means which produce position and velocity feedback signals which are applied to said driving means, the improvement comprising:

(a) acceleration feedback means arranged to produce an acceleration feedback signal for application to said driving means, said acceleration feedback signal being proportional to the acceleration component of the displacement movement of said subsystem; and the effective gain of said acceleration feedback means being

$$K_a = \frac{J}{K_{Do}} \quad \frac{X-1}{X}$$

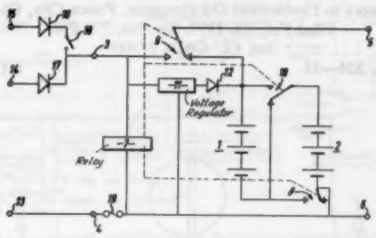
where J is the inertia of said physical subsystem; K_D is the effective gain of said driving means; K_{Do} is the value of K_D at which said servo system has desired values of damping and natural frequency in the absence of said acceleration feedback means; and X is the factor by which K_D must be increased over K_{Do} in order to obtain a desired stiffness factor of said servo system without changing the effective response time of said position feedback means, whereby said stiffness factor is decreased by a factor of X without changing the damping factor or natural frequency of said servo system; and

(b) means for applying said acceleration feedback signal to said driving means.

4,139,812
BATTERY CHARGING APPARATUS

Ernest E. J. Huggins, Sussex, England, assignor to The Post Office, London, England

Filed Jul. 19, 1977, Ser. No. 817,056
Claims priority, application United Kingdom, Jul. 23, 1976, 30921/76
Int. Cl.[2] H02J 7/00
U.S. Cl. 320—7 **5 Claims**

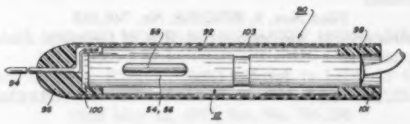


1. Battery charging apparatus comprising a rechargeable battery having a plurality of sections, input terminal means to which a source of charging current can be connected, output terminal means and switch means normally connecting said battery sections in series across said output terminals controlled by a relay connected across said input terminals and operative when energized by application of a pre-determined voltage to said input terminals to disconnect said battery from said output terminals, connect said battery sections in parallel across said input terminals and connect said input and output terminals.

4,139,813
ADAPTOR FOR AN ELECTROMETER PROBE TO PERMIT CONTACT POTENTIAL MEASUREMENTS AND METHOD FOR USING SAME

Louis W. Shaffer, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1977, Ser. No. 783,913
Int. Cl.[2] G01R 5/32
U.S. Cl. 324—32 **2 Claims**



1. A method of enabling an electrometer to measure both non-contact electrostatic potentials and contact electrical potentials, said electrometer including a probe with a charge receiving element and a surrounding housing, said method comprising:

placing the probe adjacent to the surface whose electrostatic potential is desired to be measured;

providing a readable voltage output of said electrostatic potentials;

inserting the same electrometer probe inside a conductive container when it is desired to measure contact electrical potentials;

manually moving said container to physically contact the surface whose electrical potential is desired to be mea-

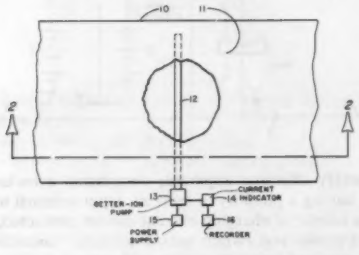
sured, with said container thus being charged to a level indicative of said contact electrical potential;
sensing the charge on the container with the electrometer probe;
providing a readable voltage output of the contact potential from the charge on the container as sensed by the electrometer probe; and
removing said probe from the container.

4,139,814

METHOD OF DETECTING CORROSION AT INTERFACE OF CONCRETE AND REINFORCING STEEL USING A HYDROGEN PROBE IMBEDDED IN THE CONCRETE

Fred J. Radd, and Donald H. Oertle, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1977, Ser. No. 770,870
Int. Cl.[2] G01N *27/00*
U.S. Cl. 324—33 **6 Claims**



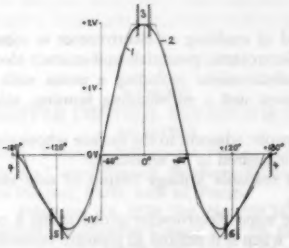
1. A method of detecting corrosion at the interface of concrete and reinforcing steel members in a reinforced concrete structure comprising:
(a) installing a hollow sensor probe formed of a material permeable to atomic hydrogen in said concrete structure;
(b) connecting said probe to a getter-ion pump whereby, upon occurrance of corrosion at the interface of said probe and said concrete, atomic hydrogen will form and permeate the wall of said probe and cause an increase in the getter-ion pump current; and
(c) monitoring the getter-ion pump current.

4,139,815

LINEAR DISTORTION MEASURING

Martin Mueller, Elsterweg 31, 7417 Pfullingen, Fed. Rep. of Germany

Filed Nov. 9, 1976, Ser. No. 740,103
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 2602916
Int. Cl.[2] G01R *27/00*
U.S. Cl. 324—57 N **12 Claims**



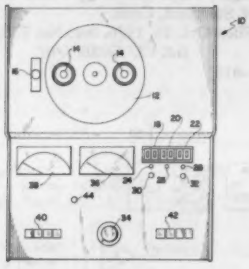
1. Apparatus for measuring linear distortion causing parameters, i.e. misalignments of amplitude and/or phase of a device under test, comprising:
(a) means for generating and transmitting into said device under test a wave form (signal) which, at any instant, consists of at least two harmonically related frequencies,
(b) means responsive to said generating means for frequency varying said wave form through a frequency band of interest,
(c) means responsive to said device under test for receiving and analyzing wave forms in such a way that an ideal transmitted wave form can be virtually reconstructed,
(d) means responsive to said receiving means for displaying quantitatively the deviations of the received wave form from said ideal wave form,
(e) means for obtaining a plot of a phase and/or amplitude related quantity pertaining to said device under test.

4,139,816

COPY PAPER TEST APPARATUS

Robert F. Sanford, Titusville, N.J., assignor to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Dec. 15, 1977, Ser. No. 860,712
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—72 **9 Claims**



1. In test equipment for analyzing the surface potential of coated light sensitive materials, apparatus comprising:
a head for holding said materials in place;
first means for rotating said head;
second means for charging said materials at a predetermined current and for a predetermined interval of time;
third means responsive to the rotations of said head for detecting the potential stored on said materials at any given instant of time;
a source of light illumination; and
fourth means for regulating the interval of current charging, an interval of light exposure illuminating said light sensitive materials and the time at which the potential stored on said materials is detected for analysis.

4,139,817

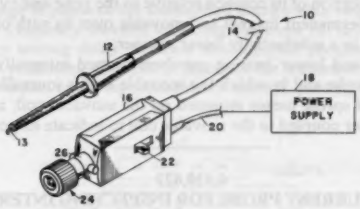
IMPEDANCE-SWITCHING CONNECTOR

Machiel Boer, and James E. Dikeman, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 13, 1976, Ser. No. 723,004
Int. Cl.[2] G01R *1/06*
U.S. Cl. 324—72.5 **9 Claims**

1. An impedance-switching connector for an electrical signal transmission system, said connector including
a generally tubular portion comprising a first conductor,
a second conductor disposed within said portion,
said first and second conductors comprising a transmission line for such a signal,
a resistor, and

switch means including means mounting said resistor for movement into and out of electrical contact with said



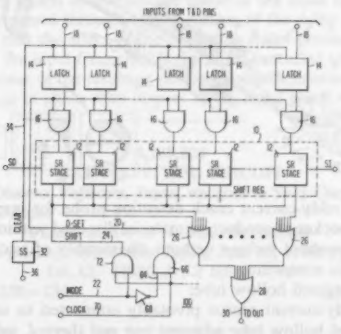
conductors for selectively shunting said line with said resistor.

4,139,818

CIRCUIT MEANS FOR COLLECTING OPERATIONAL ERRORS IN IC CHIPS AND FOR IDENTIFYING AND STORING THE LOCATIONS THEREOF

Robert P. Schneider, Wayne, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1977, Ser. No. 838,137
Int. Cl.[2] G01R *15/12*
U.S. Cl. 324—73 R **15 Claims**



1. Circuit means for collecting, identifying and storing error signals appearing on the respective test and diagnostic (T&D) terminals of a plurality of integrated circuit (IC) chips during the operation thereof, said circuit means comprising:

shift register means having a plurality of shift register stages, each of said stages being coupled to one of said T&D terminals, said shift register means being initially in a first non-shifting mode for collecting error signals from said IC chips,

first gating means coupled to said shift register means and being responsive to the storage of at least one of said error signals by said shift register stages for causing said shift register means to assume a second shifting mode and for providing SHIFT pulses in common to all of said shift register stages, said error signal being shifted serially from one stage to the next in response to said SHIFT pulses and ultimately exiting the last stage in said shift register means,

data counter means coupled to said first gating means for maintaining a count of the number of SHIFT pulses required to cause said error signal to exit said last stage of said shift register means,

memory means operatively coupled to said data counter means and being capable of storing the count contained therein,

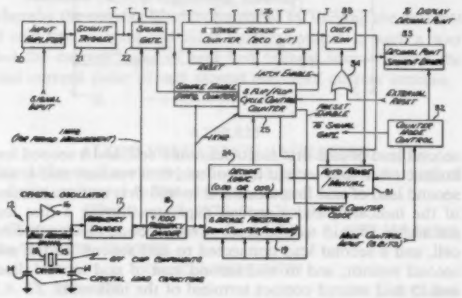
second gating means coupled to both said last stage of said shift register means and to said memory means and being responsive to the emergence of said error signal from said last register stage for enabling the writing of the count then present in said data counter means an said memory means, said last mentioned count being directly related to the location of the IC chip on whose T&D terminal the error signal originated.

4,139,819

MULTIFUNCTION FREQUENCY COUNTER

Eugene R. Worley, 8961 Jade Cir., Westminster, Calif. 92683

Filed Dec. 1, 1977, Ser. No. 856,528
Int. Cl.[2] G01R *23/14*
U.S. Cl. 324—79 D **6 Claims**



1. An improved multifunction frequency counter for use in combination with a crystal oscillator which includes a crystal and a pair of crystal load capacitors and with a digital display, said improved multifunction frequency counter comprising:

a. frequency means for providing a plurality of frequencies electrically coupled to the crystal oscillator;

b. down counting means for counting down from a preset number to zero electrically coupled to said frequency means;

c. pulse shaping means for shaping an input signal of a particular frequency to be measured;

d. enabling means for providing an enabling signal electrically coupled to said down counting means;

e. a signal gate having a first input electrically coupled to said pulse shaping means, a second input electrically coupled to said enabling means and a third input electrically coupled to said frequency means, said signal gate having an output that corresponds to the frequency of the input signal when it is summed for a period of time;

f. up counting means for counting up the signal from said output of said signal gate; and

g. display driving means for driving the digital display electrically coupled to said up counting means.

4,139,820

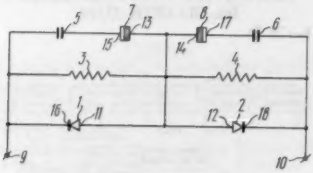
A.C. AND D.C. VOLTAGE POLARITY INDICATOR UTILIZING ELECTROCHROMIC CELLS

Oyars A. Rode, Riga, U.S.S.R., assignor to Latvijsky Gosudarstvenny Universitet Imeni P. Stuchki, Riga, U.S.S.R.

Filed May 12, 1977, Ser. No. 796,230
Claims priority, application U.S.S.R., May 17, 1976, 2360113
Int. Cl.[2] G01R *19/14*
U.S. Cl. 324—133 **1 Claim**

1. An electrochromic voltage indicator comprising: a first electrochromic cell having a first lead associated with one polarity and a second lead associated with another polarity of said first cell; a second electrochromic cell having a first lead associated with one polarity and a second lead associated with another polarity of said second cell, said first leads associated with like polarities of said first and second electrochromic cells being connected to each other; a first diode having a first lead associated with one electrode thereof and a second lead associated with the other electrode thereof; a second diode having a first lead associated with one electrode thereof and a second lead associated with the other electrode thereof, said first leads

associated with like electrodes of said first and second diodes being connected to each other; first and second contact terminals of the indicator; first and second resistors each having a first lead and a second lead, said first leads of said first and second resistors, of said first and second electrochromic cells, and of said first and second diodes being connected to each other; a first capacitor having a first lead connected to said



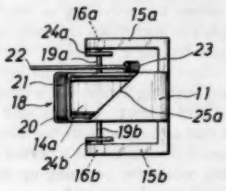
second lead of said first electrochromic cell, and a second lead connected to said second lead of said first resistor, and to said second lead of said first diode and to said first contact terminal of the indicator; and a second capacitor having a first lead connected to said second lead of said second electrochromic cell, and a second lead connected to said second lead of said second resistor, and to said second lead of said second diode and to said second contact terminal of the indicator.

4,139,821

INNER MAGNET TYPE MOVABLE COIL INSTRUMENT WITH LINEAR SCALE

Kizo Adachi, 10-9, 3-chome, Negishi, Taito-ku, Tokyo, Japan

Filed Mar. 28, 1977, Ser. No. 782,029
Claims priority, application Japan, Mar. 29, 1976, 51/33591
Int. Cl.[2] G01R *5/06, 1/16*
U.S. Cl. 324—151 A **8 Claims**



1. An inner magnet type movable coil instrument having a substantially linear scale, comprising:

a cylindrical permanent magnet magnetized to axis-symmetrically form a pair of opposite magnetic poles which extend in the direction of the axis of the cylindrical permanent magnet;

a pair of arcuate magnetic plates made of soft iron and bonded to respective peripheral surface portions of the cylindrical permanent magnet, each magnetic pole of the cylindrical permanent magnet being located substantially at a central line of a respective magnetic plate;

a semi-cylindrical yoke made of soft iron and secured to a portion of the peripheral surface of the cylindrical permanent magnet which is orthogonal to said opposite magnetic poles, a gap being provided between the cylindrical permanent magnet and the yoke, said yoke being arranged coaxial with the cylindrical permanent magnet and having first and second inclined end sections which confront the magnetic poles of the cylindrical permanent magnet with a gap therebetween;

a movable coil rotatable coaxially of the cylindrical permanent magnet and in said gap between the cylindrical permanent magnet and the yoke, the rotating area of the movable coil including the confronting gap between the first and second inclined end sections of the yoke and the magnetic poles of the cylindrical permanent magnet, the coil passing through said confronting gaps at an intermediate portion of its rotation relative to the yoke and cylindrical permanent magnet and movable over its path of rotation in a substantially linear manner;

upper and lower bearing members formed integrally with the yoke and in which the movable coil is journalled;

control spring means mounted on the movable coil; and

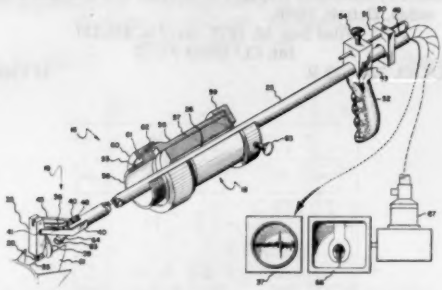
a pointer coupled to the movable coil to indicate its position.

4,139,822

EDDY CURRENT PROBE FOR INSPECTING INTERIORS OF GAS TURBINES, SAID PROBE HAVING PIVOTAL ADJUSTMENTS AND A BORESCOPE

Robert H. Urich, Greer, S.C., and Maurice A. Freeman, Burnt Hills, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 14, 1977, Ser. No. 806,544
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—219 **5 Claims**



1. An eddy-current crack detection probe for inspecting a turbine bucket of conductive material disposed within a casing of an assembled turbine without disassembly of said turbine, said probe comprising:

an elongated hollow tube;

an eddy-current sensor pivotably connected to said elongated hollow tube adjacent one end thereof, said sensor movable between a first position permitting insertion of said sensor through a small opening in said casing and a second position permitting inspection of said turbine bucket for the presence of cracks;

a yoke, said yoke rigidly attached to and extending from one end of said hollow tube, and having a yoke pivot axis for pivotably securing said sensor within said yoke;

means for remotely moving said sensor from said first position to said second position and from said second position to said first position, said means for remotely moving said sensor including a rod axially slidable within said tube and a link member pivotally connected at one end to said rod and at the other end to said sensor in a manner such that movement of said rod along its axis will cause rotation of said sensor about said yoke pivot axis, and

a borescope carried within said hollow tube and adapted to allow remote viewing of said eddy-current sensor and the turbine bucket to be inspected to ensure accurate positioning of said sensor and to scan portions of said turbine bucket of particular interest.

4,139,823

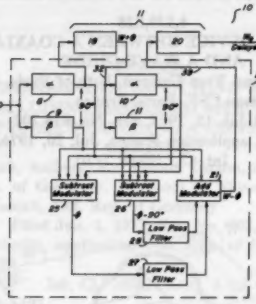
ELECTRICAL ENERGY TRANSMISSION NETWORK

Paul N. Winters, P.O. Box 327, Trumann, Ark. 72472

Filed Jul. 18, 1977, Ser. No. 816,813
Int. Cl.[2] H03B *1/04;* H04B *1/12*
U.S. Cl. 328—155 **9 Claims**

1. A method of maintaining a constant phase relationship

between the input and output terminals of an energy transmission network having energy storing delay elements producing a change in phase of the transmitted energy with respect to an input frequency thereof, including the steps of: dividing the energy storing delay elements into separate portions respectively producing changes in phase of the transmitted energy with respect to an input frequency thereof; passing the transmitted energy through said divided delay portions in sequence; providing means to readjust the phase of the input frequency after it is passed through only a portion of the delay elements in order that the effect of the remaining delay portion on the phase of the input frequency is therefore cancelled so that the output phase of the resulting network exhibits substantially no net change in phase with respect to the input phase.



4,139,824

GAIN CONTROL CIRCUIT

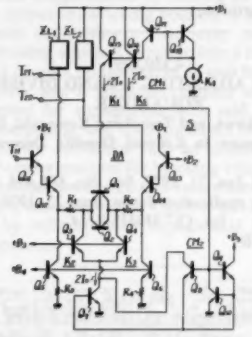
Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 14, 1977, Ser. No. 806,458

Claims priority, application Japan, Jun. 17, 1976, 51-71346

Int. Cl.² H03G *3/30*; H03F *3/45*

U.S. Cl. 330—254 **11 Claims**



1. A gain control circuit comprising:

(a) an input terminal supplied with an input signal to be controlled;

(b) an output terminal for deriving an output signal;

(c) first and second variable impedance means connected in series between said input and output terminals;

(d) first variable current source means connected to the connection point of said first and second variable impedance means;

(e) second and third variable current source means respectively connected to said input and output terminals, said first, second and third variable current source means varying during gain control such that a current value of each of said second and third current sources is substantially equal to one half of that of said first current source, and the current flow directions of said second and third current sources is opposite with respect to said first current source so as to provide a source and sink for currents through the variable impedance means; and

(f) a plural set of said input and output terminals, first and second variable impedance means, and first, second and third current source means are provided, and each set of said second and third current sources are controlled by a common current regulating means;

whereby the output signal is controlled by varying the currents of said first, second and third current sources in such a way that the current value of said first current source equals the total current value of said second and third current sources.

4,139,825

AUDIO FREQUENCY AMPLIFIER

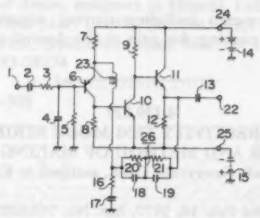
Shigeki Inoue, Toyokawa, and Isao Akitake, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 27, 1978, Ser. No. 900,592

Claims priority, application Japan, May 4, 1977, 52-50708; May 11, 1977, 52-53088

Int. Cl.² H03F *3/183*

U.S. Cl. 330—260 **8 Claims**



1. A low frequency amplifier comprising:

a first amplifier including a first input terminal receiving an input signal in the audio frequency range which has a frequency characteristic with its amplitude increasing as the frequency increases, a second input terminal receiving a negative feedback signal, and a first output terminal;

a second amplifier including a second output terminal and a third input terminal which is connected to said first output terminal of said first amplifier to receive an output signal from said first amplifier;

a negative feedback network connected between said second input terminal of said first amplifier and said second output terminal of said second amplifier and having its negative feedback level changed with a characteristic corresponding to the frequency characteristic of said input signal; and

an inductance element connected between said second input terminal of said first amplifier and said negative feedback circuit and having an impedance which is small for said input signal and large for a signal whose frequency is higher than that of said input signal in the high frequency range.

4,139,826

CRYSTAL OVERTONE OSCILLATOR USING CASCADE CONNECTED TRANSISTORS

Bortolo M. Pradal, Pittsburgh, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,749

Int. Cl.² H03B *5/36*

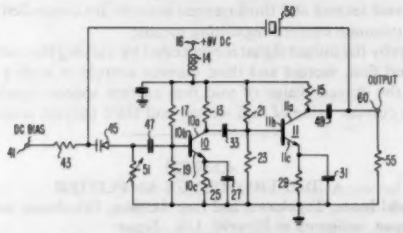
U.S. Cl. 331—116 R **7 Claims**

1. An overtone crystal oscillator comprising:

a first transistor including a base, emitter and collector electrodes,

a crystal having natural resonances at a fundamental frequency and higher odd overtone frequencies,

feedback means including a second transistor and said crystal connected in series between the collector electrode of said first transistor and the base of said first transistor for providing sufficient gain and phase shift at a selected



overtone frequency to achieve oscillation at the overtone frequency, said second transistor providing about 180° additional phase shift at the desired overtone frequency.

means coupled to the electrodes of said first and second transistors for biasing said first and second transistor as an amplifier,

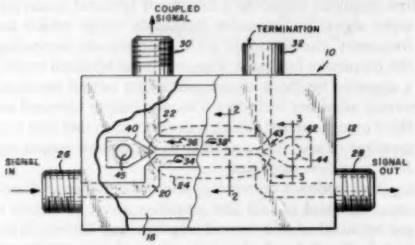
said biasing means including current negative feedback means for peaking the gain at the desired overtone frequency.

4,139,827

HIGH DIRECTIVITY TEM MODE STRIP LINE COUPLER AND METHOD OF MAKING SAME

Thomas J. Russell, Sunnyvale, Calif., assignor to Krytar, Sunnyvale, Calif.

Filed Feb. 16, 1977, Ser. No. 769,035
Int. Cl.² H01P 5/18
U.S. Cl. 333—10 **14 Claims**



1. A TEM mode strip line coupler for coupling energy over a broad frequency range from a primary transmission path to a secondary transmission path with high directivity comprising:

an outer conductor;

a solid dielectric means disposed within and substantially filling said outer conductor;

a planar primary transmission line, for forming the primary transmission path, disposed in a first plane within and supported by said dielectric means;

a planar auxiliary transmission line, for forming the secondary transmission path, disposed in a second plane parallel to said first plane within and supported by said dielectric means, said auxiliary transmission line having a portion in coupling proximity with said primary transmission line to form a coupled portion;

at least one planar conductive element of the same order of thickness as said transmission line, having a pointed end, disposed in a plane selected from said first plane and said second plane, said conductive element being positioned outside but in general alignment with said coupled portion and with said pointed end immediately adjacent and pointing to the end of said coupled portion where the transmission lines diverge; and

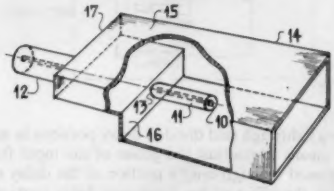
conductive means for coupling said conductive element to said outer conductor.

4,139,828

TRANSITION DEVICE BETWEEN A COAXIAL LINE AND A WAVE-GUIDE

Yves Commault, and Yves Campan, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 15, 1977, Ser. No. 816,202
Claims priority, application France, Jul. 20, 1976, 76 22141
Int. Cl.² H01P 5/10
U.S. Cl. 333—26 **6 Claims**



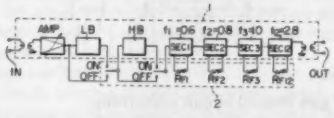
1. A longitudinal transition device for coupling a coaxial transmission line having a central core and an external conductor, and a wave guide, comprising a transverse partition for filling at least partly a transverse section of the wave guide, an adjacent cavity coupled to the wave guide, near said transverse partition, said transverse partition comprising an opening by which the coaxial line central core is introduced and extends rectilinearly in said wave guide, said central core axis being substantially parallel to and offset with respect to the wave guide axis and said coaxial line external conductor being electrically connected to said partition, said cavity extending said wave guide on the same side as said coaxial line with respect to said transverse partition.

4,139,829

METHOD FOR ADJUSTING A BAND DIVISION TYPE EQUALIZER

Takao Isago, Ichikawa, and Tomokazu Komazaki, Omiya, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1977, Ser. No. 808,476
Claims priority, application Japan, Jun. 23, 1976, 51/73088
Int. Cl.² H03H 7/14
U.S. Cl. 333—28 R **6 Claims**



1. A method for adjusting a band division type equalizer said equalizer comprising a circuit means including a plurality of equalizer sections and a setting means including a plurality of switches and a plurality of variable resistor means, each of said resistor means being connectable to one of said equalizer sections said method comprising:

(a) measuring the characteristics of a transmission line to be equalized with said setting means connected in said equalizer;

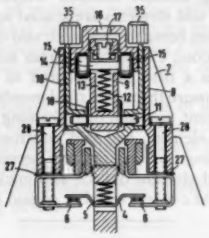
(b) disconnecting said setting means from said equalizer;
(c) calculating an adjustment value for each of said variable resistors of said setting means as a function of the measured equalization characteristic and a desired equalization characteristic;
(d) adjusting each of said variable resistors of said setting means in accordance with said adjustment value; and
(e) reconnecting said setting means to said circuit means wherein said equalizer has the desired equalization characteristic.

4,139,830

ELECTROMAGNETIC SWITCHING APPARATUS INCLUDING IMPROVED MEANS FOR MECHANICALLY LATCHING A CONTACT BRIDGE CARRIER

Georg Streich, Amberg, and Günter Gnahn, Sulzbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 1, 1977, Ser. No. 802,460
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625292
Int. Cl.² H01H *3/02, 3/04*
U.S. Cl. 335—191 **8 Claims**



1. In a remotely-controllable electromagnetic switching apparatus including a housing, a contact bridge carrier disposed within said housing, and means for mechanically latching said contact bridge carrier by locking said contact bridge carrier in an operative switching position in said housing, said latching means comprising a first lever member disposed within said housing which is movable into a return-movement region of said contact bridge carrier in said housing by means of a spring force and is pivotably coupled to a second lever member adapted for engagement with said carrier, the improvement comprising said lever members comprising toggle levers adapted for movement into an almost fully-extended, beyond dead-center position for blocking return movement of said contact bridge carrier into said return movement region in said housing, at least one of said toggle levers being coupled to and guided by rollers which engage said housing of said switching apparatus.

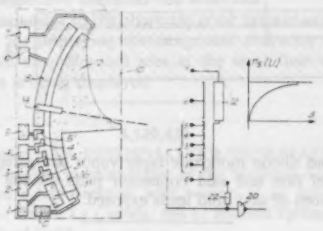
4,139,831

CONTROL FOR ELECTRICAL POSITIONING DRIVES

Wolfgang Ortlieb, Leinfelden-Echterdingen, and Friedrich Grossmann, Rohrdorf, both of Fed. Rep. of Germany, assignors to Georgii-Kobold August Heine KG, Leinfelden, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 846,990
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649251
Int. Cl.² H01C *10/16*
U.S. Cl. 338—128 **11 Claims**

1. A control apparatus for electrical variable speed positioning drives, especially for sewing machine positioning drives having a range of adjustment providing a preset nominal value of speed and a range of adjustment for at least one additional signal in digital form comprising a base element, potentiometer means arranged on said base element for producing said preset nominal value, said potentiometer means including at least one first lamellar contact element, slider means having a path of travel for contacting said first contact element, and at least one



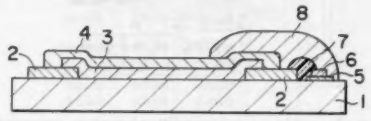
second lamellar contact element having a low resistance and arranged adjacent said first contact element in the path of travel of said slider means for producing said additional digital signal.

4,139,832

GLASS-COATED THICK FILM RESISTOR

Yoshimi Yoshino, Yokohama, and Nobuyuki Sugishita, Yokosuka, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 1, 1977, Ser. No. 773,175
Claims priority, application Japan, Mar. 19, 1976, 51-29245; Apr. 7, 1976, 51-38274
Int. Cl.² H01C *1/012*
U.S. Cl. 338—308 **5 Claims**



1. A glass-coated thick film resistor comprising a substrate, at least two terminals formed on said substrate, a resistor formed on said substrate and between said at least two terminals, and a crystallized glass coating-layer formed on said substrate by covering said resistor, wherein said crystallized glass-coating layer is formed by firing a crystallizable glass-coating consisting of 62 to 80% by weight of PbO, 5 to 31% by weight of ZnO, 5 to 18% by weight of B_2O_3, 0.2 to 8% by weight of Al_2O_3 and 1 to 5% by weight of SiO_2 and having a crystallizing temperature of 400° to 600° C.

4,139,833

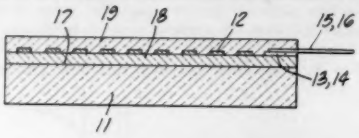
RESISTANCE TEMPERATURE SENSOR

Thomas S. Kirsch, Oxnard, Calif., assignor to Gould Inc., Oxnard, Calif.

Filed Nov. 22, 1976, Ser. No. 743,706
Int. Cl.² H01C *7/00, 1/012*
U.S. Cl. 338—308 **3 Claims**

1. A deposited thin-film resistance temperature sensor, comprising:
a high-density alumina substrate having a flat polished surface;
a first silicon monoxide layer vapor deposited onto said substrate flat polished surface;
a sinuous length of evaporated nickel film deposited onto said first silicon monoxide layer;
first and second connector pads deposited onto said nickel film spaced from one another along the nickel film that amount necessary to define a predetermined magnitude of electrical resistance for said nickel film;

first and second gold leads respectively resistance welded to said first and second connector pads; and



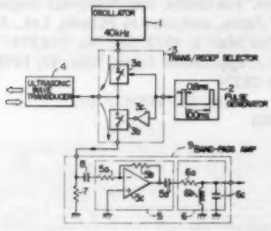
a second silicon monoxide layer vapor deposited over said nickel film and said connector pads leaving outer end portions of said gold leads exposed.

4,139,834

ULTRASONIC WAVE TRANSMITTER/RECEIVER

Takeshi Matsui, Aichi, and Matatoyo Hinachi, Nagoya, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 29, 1977, Ser. No. 811,441
Claims priority, application Japan, Jul. 3, 1976, 51-79177
Int. Cl.[2] G01S *9/66, 7/66*
U.S. Cl. 340—1 R **2 Claims**



1. An ultrasonic wave transmitter/receiver comprising:
an ultrasonic wave transducer for transmitting an ultrasonic wave having a carrier frequency equal to the resonant frequency thereof toward an object and receiving an echo wave reflected by said object, said transducer producing an output signal in response to the received echo wave;
an oscillator circuit oscillating at said carrier frequency;
a pulse generator circuit for generating a pulse signal having a constant frequency; and
a selection circuit, connected to said pulse generator, for alternately connecting said transducer with said oscillator circuit and with a band-pass amplifier circuit in response to said pulse signal, said band-pass amplifier circuit including:
a load resistor adapted to be connected in parallel with said transducer when the transducer is connected to said band-pass amplifier circuit by said selection circuit, said load resistor lowering the strength of said output signal at a frequency around the antiresonant frequency of said transducer during such parallel connection with the transducer.

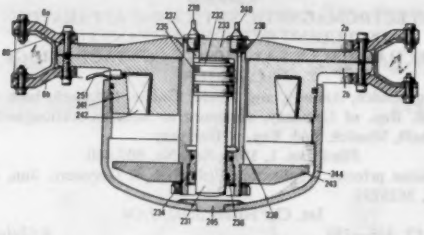
4,139,835

DEVICE FOR TRANSMITTING ACOUSTIC WAVES THROUGH A LIQUID MEDIUM

Jacques Cholet, L'Etang la Ville, and Pierre Magneville, Vernouillet, both of France, assignors to Institut Francais du Petrole, France

Filed Mar. 22, 1977, Ser. No. 779,992
Claims priority, application France, Mar. 22, 1976, 76 08418
Int. Cl.[2] H04B *13/00*
U.S. Cl. 340—12 R **12 Claims**

1. In a device for emitting by implosion acoustic waves in a liquid medium comprising at least first and second rigid elements in contact with the liquid medium, said rigid elements defining a water tight enclosure with a sealing membrane of deformable material, each of said elements including a contact area in said enclosure adapted to be applied intermittently against a corresponding contact area of the opposite element, hydraulic means for moving said elements apart from each other, and electro-magnetic means for intermittent locking of said elements in spaced apart relationship, the improvement comprising said first and second rigid elements including contact members separate from said contact areas, said contact



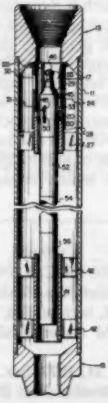
members having contact surfaces which abut when said contact areas of said elements are spaced apart, and said electromagnetic means being formed with said contact members of said first and second elements, wherein said electromagnetic means comprises a first plate secured to said first element outside said enclosure through a rigid member passing through said second element, said first plate forming said contact member of said first element, and said electromagnetic means including an exciting coil secured to a second plate connected with said second element outside said enclosure, said second plate forming said contact member of said second element.

4,139,836

WELLBORE INSTRUMENT HANGER

Preston E. Chaney, Dallas, and H. Eugene Sharp, Houston, both of Tex., assignors to Sperry-Sun, Inc., Sugar Land, Tex.

Filed Jul. 1, 1977, Ser. No. 812,168
Int. Cl.[2] G01V *1/40*
U.S. Cl. 340—18 NC **13 Claims**



13. An acoustic instrument housing section for use in a drill pipe acoustic telemetry system, comprising,
a section of pipe having means at its ends for connecting the pipe section into a string of pipe;
means in the section of pipe for receiving an acoustic instrument,
said receiving means including a longitudinal portion essen-

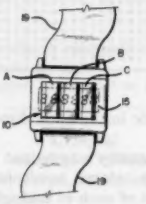
tially concentric with the axis of the pipe section for providing a direct low impedance sound path between the receiving means and the wall of the string of pipe to facilitate the transmission of longitudinal sound waves in the wall of the pipe string telemetry system.

4,139,837

INFORMATION ENTRY SYSTEM

James Liljenwall, and David Moss, both of Berkeley, Calif., assignors to Creative Ventures, Inc., Dayton, Ohio

Filed Jun. 22, 1977, Ser. No. 808,782
Int. Cl.[2] G06K *9/10*; G06F *7/38*
U.S. Cl. 340—146.3 SY **17 Claims**



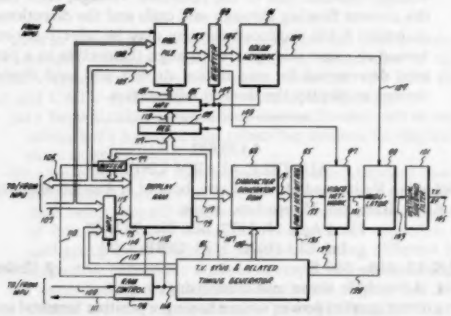
1. The method of manually entering information into an information processing device, comprising the steps of
(a) providing a sensing member having a face and capable of sensing the direction of strokes made on said face by a human finger;
(b) assigning direction codes to pieces of information to be entered based upon the first and last stroke directions;
(c) making a finger stroke on the surface of the face in accordance with said assignment; and
(d) translating sensed stroke directions into a form usable by the processing device.

4,139,838

COLOR PATTERN AND ALPHANUMERIC CHARACTER GENERATOR FOR USE WITH RASTER-SCAN DISPLAY DEVICES

Fumiyuki Inose, San Jose; Hirohido Endo, and Akio Komatsu, both of Cupertino, all of Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,100
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—703 **20 Claims**



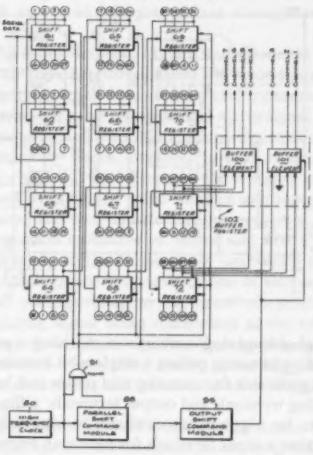
1. A color pattern and alphanumeric character generating circuit for use with a raster-scan display device, said generating circuit comprising:
means for storing pattern and character display codes at addressable locations therein, each addressable location in said storing means containing a color code byte or a character code byte, said character code byte defining a particular character to be displayed in a character cell on said raster-scan display, and said color code byte defining the color pattern for a portion of the character cell on said raster-scan display;
means responsive to the addressed color code bytes in said storing means for displaying the designated color pattern in its respective character cell area; and
means responsive to the character code bytes in said storing means for displaying the designated character in its respective character cell area at the same time the color pattern is being displayed.

4,139,839

DIGITAL DATA REFORMATTER/DESERIALIZER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Alexander Engel, La Canada, and L. Richard Springer, Glendale, both of Calif.

Filed Mar. 18, 1977, Ser. No. 779,415
Int. Cl.[2] G06F *5/04*
U.S. Cl. 340—347 DD **14 Claims**



1. Apparatus for reformatting and deserializing a continuous series of digital data blocks, each of said data blocks comprising an ordered series of m data words, each of said data words comprising an ordered series of n data bits, said apparatus comprising:
shift register means containing at least nm - 1 sequential bit positions, said shift register means adapted to sequentially receive the bits of said block and shift said bits serially, said shift register means further adapted to selectively receive and output bit values at selected bit positions therein;
parallel shift command means to selectively cause bit values from selected ones of said bit positions to be inputted to selected other ones of said bit positions, in prescribed one-to-one correspondence in accordance with the relationship:

$$I = nm - [(B - 1)m + W],$$

where:
I = the sequential bit position, within said shift register means, at which a given binary datum is to be received;
n = the number of data bits in each data word;
m = the number of data words in each data block;

B = the ordered bit position, within its data word, of said given binary datum; and

W = the ordered word position, within the data block, of the data word containing said given datum;

output buffer means having at least m bit positions, to selectively receive, from a selected group of m bit positions in said shift register means, the bit values therein;

clock means to generate command pulses to activate said shift register means, said parallel shift command means responsive to said command pulses; and

output shift command means, responsive to said command pulses, to generate secondary pulses to activate said output buffer means.

4,139,840

LADDERLESS D/A CONVERTER

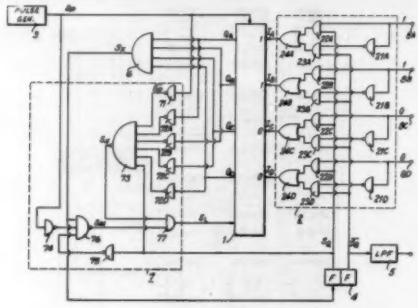
Takao Mogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 764,059

Claims priority, application Japan, Jan. 29, 1976, 51-8685

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **4 Claims**



1. A digital-to-analog converter comprising: a pulse generator providing counting pulses; a single n-bit counter connected with said generator for counting said pulses and having n-parallel loading terminals and output terminals; a flip-flop circuit adapted to be triggered successively to alternating first and second states; n-input terminals for receiving respective bits of an incoming n-bit digital signal to be converted; a polarity reversing circuit having n-channels each connecting a respective one of said input terminals with a respective one of said loading terminals of the counter, each of said channels being controllable by said flip-flop circuit to apply the respective bit of the incoming digital signal to the respective loading terminal with its polarity reversed in response to said first state and with its polarity unchanged in response to said second state of the flip-flop circuit so that said loading terminals have the complement of said incoming digital signal and the true incoming digital signal alternatively applied thereto in said first and second states, respectively; first logic circuit means connected to said output terminals of the counter for triggering said flip-flop circuit each time said counter counts said pulses up to overflow; second logic circuit means for providing a loading signal by which said counter is preset in accordance with the bits then applied to said loading terminals, said second logic circuit means being connected with said pulse generator, said output terminals and said flip-flop circuit to provide said loading signal at predetermined intervals following the triggering of said flip-flop circuit to said first and second states, respectively, so that said counter is made to count up to overflow alternately from a preset to said complement of the incoming digital signal and from a preset to said true incoming digital signal; and low pass filter means connected to said flip-flop circuit and being responsive to said alternating first and second states thereof to provide therefrom an analog signal having a duty cycle which corresponds to said incoming digital signal to be converted.

4,139,841

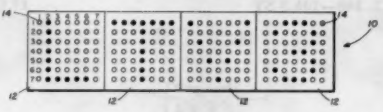
ELECTROMAGNETIC INFORMATION DISPLAY SYSTEM

Charles E. Roberts, Norristown, Pa., assignor to E-Systems, Inc., Dallas, Tex.

Filed Jun. 22, 1977, Ser. No. 808,998

Int. Cl.[2] G08B *5/22*

U.S. Cl. 340—373 **3 Claims**



1. An electromagnetic information display system comprising:

a plurality of permanently magnetized spheres having uniform contrastingly colored hemispheres associated with the magnetic poles of each of said spheres,

a printed circuit board having a thickness at least as great as the diameter of said spheres, said board further having a plurality of cylindrical holes formed therethrough and arranged in a matrix of columns and rows for receiving said plurality of permanently magnetized spheres,

a plurality of solenoid coils, one of said plurality of solenoid coils being positioned within each one of said cylindrical holes to selectively position said sphere within said cylindrical hole,

means for electrically interconnecting a first lead of each of said coils in a column and a second lead of each of said coils in a row,

a panel extending across the back side of said printed circuit board for insulating said printed circuit board,

a ferromagnetic back plate extending across the back of said insulated panel for magnetically retaining the alignment of said spheres with the axis of their magnetic poles normal to said back plate,

a plurality of digital drivers connected to the columns of the matrix of solenoid coils to output a ground or positive voltage corresponding to the input logic state of said drivers, and

a plurality of digital strobes connected to the rows of the matrix of solenoid coils for strobing said coils with a voltage one-half that of the reference voltage, such that the current flowing through said coils and the directional magnetic fields produced thereby may be selectively reversed to cause said spheres to align themselves in a pattern determined by said digital drivers and said digital strobes to display the desired information.

4,139,842

AUDIBLE ALARM UNIT

Nobuhiko Fujita, and Hiroshi Saito, both of 1, Aza-miyahigashi, Koya, Itami-shi, Hyogo-ken, Japan

Filed Apr. 14, 1977, Ser. No. 787,461

Int. Cl.[2] H03B *5/30*; G08B *3/00*

U.S. Cl. 340—384 E **8 Claims**

1. An audible alarm unit comprising:

a direct current power source having a positive terminal and a negative terminal;

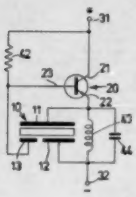
a coil;

a resistor;

a transistor having a collector, an emitter and a base, said collector, said emitter and said coil being connected in series between said positive and negative terminals of said direct current power source, said base being connected to said collector through said resistor;

a piezoelectric transducer having first and second electrodes

opposite to each other and a feedback electrode separate from said second electrode, said first electrode and said second electrode being connected to respective ends of



said coil, said feedback electrode being connected to said base of said transistor; and

a capacitor connected in parallel to said coil.

4,139,843

ALARM SYSTEM

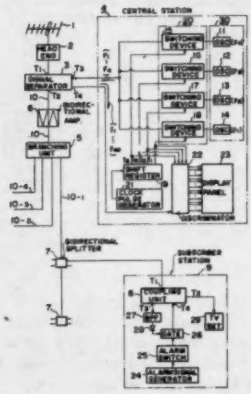
Masakatsu Watanabe, Tokyo, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed May 30, 1978, Ser. No. 911,414

Claims priority, application Japan, May 31, 1977, 52-63668

Int. Cl.[2] G08B *1/08*

U.S. Cl. 340—505 **4 Claims**



1. In an alarm system utilizing a bidirectional CATV system to remotely monitor a large number of subscribers of said CATV system from a central station connected to a front side of said CATV system, the improvement comprising:

(a) a large number of subscriber stations located one at each subscriber's location, said subscriber stations having locations in group units;

(b) a large number of alarm signal generators disposed one in each said subscriber station, said alarm signal generators each being adapted to generate an alarm signal having one of first frequencies which are common to respective of said group units, said first frequencies being different for respective subscriber stations in respective group units;

(c) interrogating signal generating means disposed in said central station to sequentially periodically generate repeatedly as interrogating signals a plurality of signal components of second frequencies which are different for respective of said group units, said second frequencies being different from said first frequencies of said alarm signals;

(d) signal separating means disposed to transmit as down-signals said interrogating signals from said central station and a television signal from a head end of said CATV system to a transmission cable of said CATV system and to transmit said alarm signals to said central station through said transmission cable;

(e) branching means connected to said transmission cable to divide and transmit said television signal and said interrogating signals to said group units;

(f) alarm switch means disposed in each said subscriber station so as to be actuated in response to the occurrence of an abnormal condition at the location of each said subscriber station, said alarm switch means being connected to said alarm signal generator in each said subscriber station;

(g) detector means disposed in each said subscriber station, whereby when said interrogating signals are applied to each said subscriber station, said detector means detects only a specific signal component having one of said second frequencies corresponding to the group unit to which each said subscriber station belongs;

(h) analogue gate means disposed and connected to said alarm switch means in each said subscriber station so as to be actuated by a detection output of said detector means in synchronism with a period of said specific signal component, whereby when said analogue gate means is actuated, said alarm signal from said alarm signal generator is passed through said analogue gate means through said alarm switch means;

(i) coupling means disposed in each said subscriber station to separately pass therethrough said television signal and said interrogating signals applied from said transmission cable and to transmit as an up-signal said alarm signal from said analogue gate means to said transmission cable;

(j) discriminator means disposed in said central station, whereby when at least one said alarm signal is received from said transmission cable through said signal separating means, said discriminator means receives at its inputs an information indicative of one of said first frequencies corresponding to the frequency of said alarm signal and another information indicative of one of said second frequencies corresponding to the signal component of the interrogating signal being transmitted at the time of the reception of said alarm signal to thereby discriminate the location of the subscriber station generating said alarm signal in accordance with the combination of said informations; and

(k) indicator means disposed in said central station so as to be controlled by said discriminator means to give an indication corresponding to the location of the subscriber station generating said alarm signal.

4,139,844

SURVEILLANCE METHOD AND SYSTEM WITH ELECTROMAGNETIC CARRIER AND PLURAL RANGE LIMITING SIGNALS

Willes W. Reeder, Fort Lauderdale, Fla., assignor to Sensormatic Electronics Corporation, Deerfield, Fla.

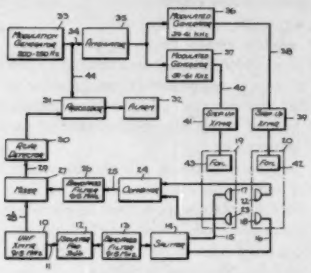
Filed Oct. 7, 1977, Ser. No. 840,240

Int. Cl.[2] G08B *13/18*

U.S. Cl. 340—572 **9 Claims**

1. The method of maintaining surveillance within a confined space to detect the presence in said space of an electric signal receptor-reradiator with signal mixing capability, said method comprising the steps of simultaneously establishing in said space first, second and third energy fields, said first field being electromagnetic in nature and produced by a microwave signal for causing said receptor-reradiator to return a signal therefrom, said second and third fields being established respectively from locations on opposite sides of said space with sufficiently low frequencies to restrict the range of the corresponding field substantially to the distance between said loca-

tions, and detecting the presence in said space of a signal consisting of a carrier component due to said first field and a



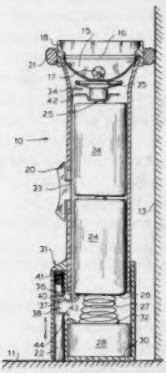
modulation component due to mixing of said second and third fields.

4,139,845

FLASHLIGHT BURGLAR ALARM APPARATUS

Alfred F. Washburn, 1448 Lakeshore Dr., Mount Dora, Fla. 32757

Filed May 2, 1977, Ser. No. 793,191
Int. Cl.[2] G08B *13/08*
U.S. Cl. 340—546 **9 Claims**



1. A portable flashlight burglar alarm apparatus comprising in combination:

a flashlight having a casing, battery means located in said casing, a switch, and a lamp operatively connected to said battery means through said switch;

an annunciator attached to said casing and coupled to said battery means;

an alarm switch coupled between said battery means and said annunciator for actuating said annunciator responsive to said alarm switch being actuated, and an annular resilient bumper attached to said flashlight casing for providing a frictional engagement with an entry door, whereby a flashlight can be used as a burglar alarm.

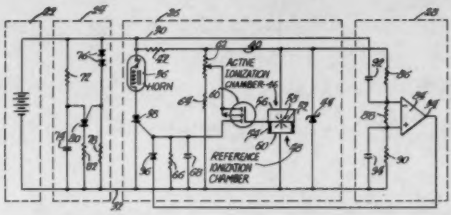
4,139,846

METHOD AND APPARATUS FOR SUPERVISING BATTERY ENERGY LEVEL

Frederick J. Conforti, Aurora, Ill., assignor to Pittway Corporation, Northbrook, Ill.

Filed Jun. 30, 1977, Ser. No. 811,827
Int. Cl.[2] G08B *19/00, 17/10*
U.S. Cl. 340—636 **31 Claims**

1. In a circuit for supervising the energy level of a battery, means for periodically loading the battery to subject the battery to a momentarily increased current flow, means for monitoring the change in voltage across the battery from the condition prior to loading to during loading, and means for generating a signal whenever the change in voltage is at least equal to a predetermined magnitude, the change in voltage being equal to at least the predetermined magnitude only whenever the energy level of the battery decreases to at least a selected level.

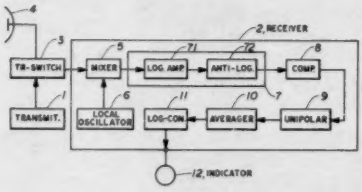


4,139,847

AUTOMATIC GROUND-CLUTTER REJECTION IN WEATHER PULSE RADAR SYSTEM

Toshio Shimzu, and Shuichi Goto, both of Mitaka, Japan, assignors to Japan Radio Company, Limited, Tokyo, Japan

Filed Jun. 15, 1977, Ser. No. 806,679
Claims priority, application Japan, Jun. 16, 1976, 51-70508
Int. Cl.[2] G01S *9/60*
U.S. Cl. 343—5 W **14 Claims**



2. A method for rejecting ground clutter from echo signals in a weather pulse radar system, comprising:

linear-detecting the received wave in the radar system to obtain spaced detected pulse signals, at least some of which are weather echo signals, and

comparing each two detected pulse signals which are spaced apart from one another by a time period that the fluctuation of weather echo signals is independent to generate an amplitude-difference signals to eliminate the ground clutter and the DC component of the weather echo signal, the variance of the amplitude-difference signals being proportional to the mean power of the weather echo, thereby obtaining signals corresponding to the mean power of the weather echo.

4,139,848

AIRCRAFT PROXIMITY WARNING INDICATOR

Richard F. Maxwell, Jr., Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

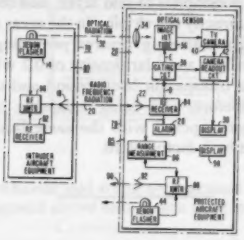
Filed Jun. 17, 1976, Ser. No. 697,100
Int. Cl.[2] G01S *9/56, 3/02*
U.S. Cl. 343—6 ND **2 Claims**

1. A method for a first aircraft to provide proximity warning to a second aircraft comprising the steps of:

generating and transmitting by said first aircraft a radio frequency signal indicative that an optical radiation pulse is about to occur;

generating an optical radiation pulse later in time by a prede-

termined amount than said radio frequency signal by said first aircraft;
receiving said radio frequency signal by said second aircraft;
sensing said optical radiation pulse during a predetermined amount of time after receiving said radio frequency signal by said second aircraft;
displaying said sensed optical radiation pulse by said second aircraft;



generating and transmitting a second signal by said second aircraft;
receiving said second signal by said first aircraft;
transmitting a third signal by said first aircraft;
receiving said third signal by said second aircraft;
measuring the elapsed time from the transmission of said second signal to the reception of said third signal; and
converting said elapsed time into an indication of range between said first aircraft and second aircraft.

4,139,849

DOPPLER FUZING SYSTEM HAVING A HIGH RESISTANCE TO NOISE AND JAMMING

Paul M. Tedder, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 3, 1954, Ser. No. 454,236
Int. Cl.² F42C *13/04*
U.S. Cl. 343—7 PF **3 Claims**

1. An electronic ordnance fuze responsive only to a signal of increasing amplitude applied for at least a predetermined minimum time, said fuze comprising: means for radiating radiofrequency energy, receiving a portion of said radiofrequency energy after reflection from a target, and mixing the radiated and reflected energy to obtain a Doppler-frequency alternating current signal of increasing amplitude as the fuze approaches the target; means for amplifying said alternating current signal; rectifier and filter means for obtaining from the amplified alternating current signal a first unipotential signal proportional to its envelope; differentiator means connected to said rectifier and filter means for obtaining a second unipotential signal which is proportional to the rate of change of said first unipotential signal; limiter means connected to said differentiator means for limiting the amplitude of the output of said second unipotential signal; and an integrator and trigger circuit to which said second unipotential signal is fed, said circuit producing a pulse which initiates detonation when said second unipotential signal has at least a predetermined minimum amplitude for at least a predetermined minimum time.

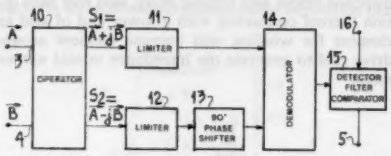
4,139,850

ARRANGEMENT FOR DETECTING THE PRESENCE OF RADAR ECHOS IN A PULSED RADAR SYSTEM

Jean C. Charlot, and Pierre Cardinet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 13, 1977, Ser. No. 832,951
Claims priority, application France, Sep. 17, 1976, 76 28022
Int. Cl.² G01S *9/22*
U.S. Cl. 343—16 M **10 Claims**

1. In a radar system, an arrangement for detecting the presence of an echo signal A received in a range gate with respect to a signal $\vec{B}$ received in at least one adjoining range gate, said arrangement comprising:
an operating circuit for receiving said signals $\vec{A}$ and $\vec{B}$ and supplying output signals $\vec{S_1} = \vec{A} + k_1\vec{B}$ and $\vec{S_2} = k_2(\vec{A} - k_1\vec{B})$, where k_1 and k_2 are amplitude and phase modifying complex coefficients;
demodulating means for demodulating one of said signals $\vec{S_1}$ and $\vec{S_2}$ by the other;



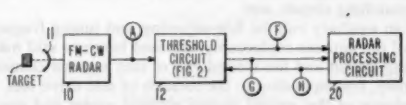
sampling, filtering and comparing means, connected to the output of said demodulating means for sampling, filtering and comparing the output signal of said demodulating means to a predetermined threshold and providing a logical presence signal indicating the presence or the absence of an echo signal in range gate.

4,139,851

TWO LEVEL THRESHOLD CIRCUIT

John J. Risko, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,917
Claims priority, application United Kingdom, Nov. 22, 1976, 48630/76
Int. Cl.² G01S *9/24*
U.S. Cl. 343—17.5 **5 Claims**



1. A threshold circuit receptive of an alternating signal and comprising in combination:
means responsive to said alternating signal exceeding a first relatively lower preselected value (V_L) for producing a first output signal corresponding thereto;
means responsive to said alternating signal exceeding a second relatively higher preselected value (V_H) for producing a second output signal corresponding thereto;
means responsive to said first and second output signals for producing a third output signal having a first value when said alternating signal reaches value V_H within time t after reaching value V_L and for producing a third output signal having a second different value when said alternating signal does not reach value V_H within time t after reaching value V_L and
means responsive to said third output signal at said second different value for producing a signal to thereafter inhibit said third output signal at said first value.

4,139,852

WHIP-TYPE ANTENNA WHICH CAN SLIDE-ADJUST THE TUNING FREQUENCY

Joji Koyanagi, 575, Oaza Yaemizo, Nabeshima-machi, Saga-shi, Saga-ken, Japan

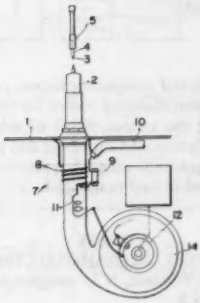
Filed Aug. 17, 1977, Ser. No. 825,349
Int. Cl.² H01L *1/10*
U.S. Cl. 343—903 **6 Claims**

1. Whip-type antenna which can slide-adjust the tuning frequency comprising:
(a) a rod antenna of a telescopic construction mounted sub-

stantially vertically on a vehicle body having a proximal end thereof secured to said body,

(b) an antenna element extruded in a flexible insulating tube, which has a considerable portion disposed in said rod antenna, said antenna element having an upper extremity thereof secured to the top of said rod antenna such that said antenna element moves upwardly or downwardly corresponding to the elevation of said rod antenna,

(c) a drive reel rotatably encased in a reel casing which is disposed below said vehicle body, said reel having a portion thereof connected with a lower end of said antenna element for winding said antenna element around said drive reel to generate the impedance in said antenna element,



(d) a matching circuit having one terminal connected to said wound end of said antenna element,

(e) a feeder having one end connected to a radio transmitting or receiving station and the other end connected with said matching circuit, and

(f) an auxiliary coil for fine-adjusting said tuning frequency of the antenna replaceably disposed between said matching circuit and the wound end of said antenna element,

whereby, corresponding to the rotation of said drive reel, said impedance of the wound atenna element varies and accordingly the tuning frequency of said whip-type antenna as a whole is variable in a wide range.

4,139,853

LASERBEAM RECORDING

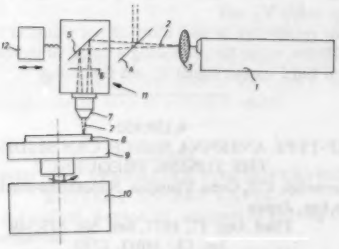
Jean-Pierre A. Ghekiere, Antwerp, and Hugo K. Peeters, Mortsel, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Sep. 22, 1977, Ser. No. 835,737

Claims priority, application United Kingdom, Sep. 24, 1976, 39781/76

Int. Cl.² G01D *15/10, 15/34*

U.S. Cl. 346—1 **20 Claims**



1. A method of directly forming a light scattering image, comprising the steps of: information-wise exposing in the visible light range to a light energy dose of at least 10^{-1} Ws cm^{-2} with a focussed laser-beam having a beam intensity of at least 10^4 W cm^{-2} a recording layer of a non-proteinaceous thermoplastic polymer layer forming a continuous medium and having dissolved therein at least one substance absorbing visible light, such substance imparting a specular density to said recording layer of at least 0.1 with respect to a monochromatic wave of the laser-beam applied in the exposure and being present in an amount of maximum 10% by weight with respect to thermoplastic polymer(s) of said layer, said recording layer being capable of directly developing in the areas struck by said beam, minute light-scattering centres providing a minimum increase of white light specular density of 0.2 when measured with respect to a transparent background and determined as described hereinbefore, and being incapable of developing such centres when exposed with the same laser-beam at an intensity reduced by a factor of 10.

4,139,854

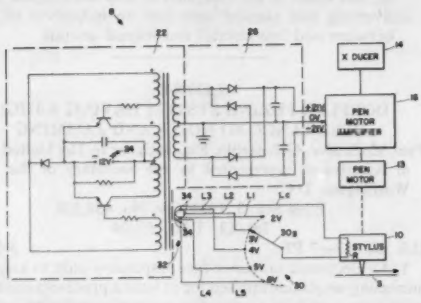
VARIABLE TEMPERATURE RECORDING STYLUS

Richard L. Walker, Amherst, N.H., assignor to M.F.E., Inc., Salem, N.H.

Filed Nov. 21, 1977, Ser. No. 853,128

Int. Cl.² G01D *15/10*

U.S. Cl. 346—76 R **6 Claims**



1. A variable temperature recording stylus comprising

A. a stylus heating element for hating the stylus,

B. an electrical inverter transformer having a primary and a secondary,

C. an auxiliary winding in the transformer secondary, and

D. means for electrically connecting the auxiliary winding to the stylus heating element.

4,139,855

RECORDER WITH DRIVEN PAPER SUPPLY IN DRAWER

Bernd F. Marquardt, Egling, Fed. Rep. of Germany, assignor to Medronik Systemtechnik GmbH, Fed. Rep. of Germany

Filed Nov. 29, 1977, Ser. No. 855,761

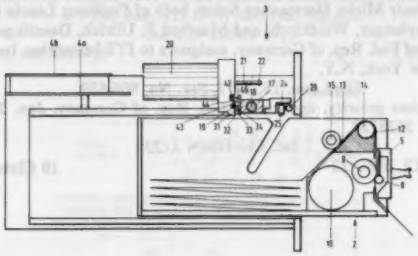
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655495

Int. Cl.² G01D *15/00, 15/28*

U.S. Cl. 346—145 **10 Claims**

1. A recorder for recording measured data, in particular medical measured data paper rolls or folded paper, comprising a means to be pulled out for inserting the paper, a drive means for the paper, a stylus arrangement, and an electrical control circuit for the stylus displacement, wherein said paper drive means is arranged in said means adapted to be pulled out for

inserting the paper, a means which is actuable from outside being provided for pressing the paper into contact with a drive



element, and wherein said stylus arrangement and said control circuit are disposed above said means to be pulled out.

4,139,856

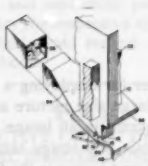
ELECTROSTATIC RECORDER HAVING A FIXED HEAD MADE UP OF A LAMINATED STACK OF RECORDING STYLI

Dean M. Peterson, Littleton, and Paul A. Diddens, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 611,665, Sep. 9, 1975, abandoned. This application Apr. 1, 1977, Ser. No. 783,547

Int. Cl.[2] G03G *15/06, 17/02, 21/00*

U.S. Cl. 346—163 **18 Claims**



1. In an improved recorder for recording on an electrosensitive web material a recording head, comprising in combination:

an electrically insulating electrode mounting means,

a plurality of separate electrically conductive flat plate recording electrodes mounted on said mounting means with each of said plate electrodes having a slot passing therethrough to allow said mounting means to fit in said slot to mount said electrodes in a layered arrangement on said mounting means and having a free-standing recording pin and an electrical terminal as coplaner extensions of said flat electrode; and

electrical insulating means between each of said electrodes to electrically isolate and physically separate said electrodes.

4,139,857

SCHOTTKY BARRIER TYPE SOLID-STATE ELEMENT

Toshinori Takagi, Nagaokakyo; Kiyoshi Morimoto, and Yukihiko Utamura, both of Mobara, all of Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Jul. 15, 1976, Ser. No. 705,696

Claims priority, application Japan, Jul. 18, 1975, 50-87254; Nov. 22, 1975, 50-139750; Nov. 22, 1975, 50-139751

Int. Cl.[2] H01L *29/48, 29/56, 29/64*

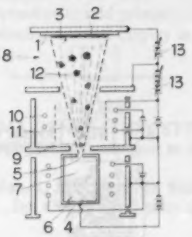
U.S. Cl. 357—15 **1 Claim**

1. A flexible Schottky barrier type solid-state element comprising:

a flexible film substrate board;

a first metallic film layer deposited on said flexible film substrate board by the ionized-cluster-beam deposition process wherein a material to be deposited is vaporized into a vapor, injected into a vacuum region of about 10^{-2} Torr or less to form aggregates of said vapor called clusters, said clusters are bombarded with electrons to produce ionized clusters, and said ionized clusters are accelerated by an electric field such that they impinge on a surface, thereby forming a film layer of said material on said surface, said first metallic film layer forming an ohmic contact semiconductor-side terminal electrode;

a semiconductor film layer deposited on said first metallic film layer by said ionized-cluster-beam deposition process,



a second metallic film layer deposited on said semiconductor film layer by said ionized-cluster-beam deposition process, said second metallic film layer and said semiconductor film layer forming a Schottky barrier at the boundary therebetween;

a current-collecting metallic-board-side terminal electrode provided on one portion of said second metallic film; and

a reflection preventative film layer provided on another portion of said second metallic film;

whereby said Schottky solid state element can be folded or rolled into a compact size.

4,139,858

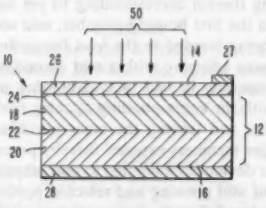
SOLAR CELL WITH A GALLIUM NITRIDE ELECTRODE

Jacques I. Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,858

Int. Cl.[2] H01H *27/14*

U.S. Cl. 357—30 **7 Claims**



1. A semiconductor photovoltaic device comprising:

a body of semiconductor material;

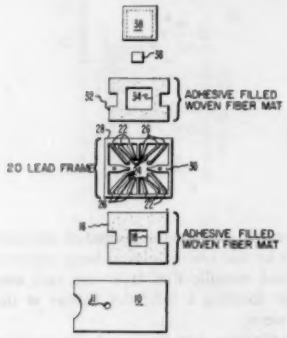
means in said body for defining a P-N junction, said means including an N-type layer having a surface; and

a transparent, conductive gallium nitride electrode layer on said surface contacting said N-type region and forming an ohmic contact thereto.

4,139,859
SEMICONDUCTOR DEVICE PACKAGE

Terrence E. Lewis, San Diego, and Kenneth N. Abel, Vista, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 591,286, Jun. 30, 1975, Pat. No. 3,999,285. This application Nov. 15, 1976, Ser. No. 741,747
Int. Cl.[2] H01L *23/28*
U.S. Cl. 357—72 5 Claims



1. A semiconductor device package comprising:

a substrate having a major surface;

a first layer of a woven fiber mat serving as a first housing member, said fiber mat being impregnated throughout with a cured thermosetting epoxy resin adhesive, said housing member having an opening therein for receiving a semiconductor device, said housing member being bonded to said substrate surface by the epoxy adhesive within the housing member;

a plurality of spaced mutually convergent electrically conductive lead frame finger members, said lead frame finger members being bonded to said first housing member by the epoxy adhesive therein, with inner portions of the finger members teerminating at said opening;

a second layer of a woven fiber mat serving as a second housing member, said second woven fiber mat layer being impregnated throughout with a cured thermosetting epoxy resin adhesive, said second housing member having an opening therein corresponding to yet larger than the opening in the first housing member, said second housing member being bonded to the lead frame finger members by the epoxy adhesive within said second housing member, said opening in said second housing member being aligned with the corresponding opening in the first housing member and leaving the inner portions of said lead frame finger members exposed thereby permitting a semiconductor device to be bonded to said substrate within the confines of said opening and selected portions of the device to be bonded to the inner portions of the lead frame finger members;

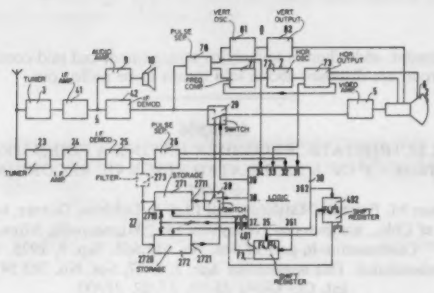
a lid for covering the opening in said second housing member, said lid being bonded to the second housing member by the epoxy adhesive therein; and

said epoxy adhesive filling voids in the fiber mat of the first and second housing members whereby said package provides an hermetically sealed enclosure for the semiconductor device.

4,139,860
TELEVISION RECEIVER EQUIPPED FOR SIMULTANEOUSLY SHOWING SEVERAL PROGRAMS

Ljubomir Micic; Hermannus Schat, both of Freiburg; Laurin C. Freyberger, Waldkirch, and Manfred F. Ullrich, Denzlingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,639
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628737
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—22 10 Claims



1. A television receiver for displaying a selected first program in the form of a large size picture and simultaneously displaying a further program in an image sector of the first program such that at least one image sector of the further program becomes visible on a screen in the form of a small size picture, said television receiver containing a storage device in which the picture contents of said further program, with a reduced number of lines, is first stored, with the aid of the filtered out vertical and horizontal synchronizing pulses, into defined storage positions and thereafter made visible at least partly in a corresponding position in said large size picture, comprising:

a first tuner associated with said first program;

a second tuner associated with said further program;

a first IF stage coupled to the output of said first tuner;

a second IF stage coupled with the output of said second tuner;

a first IF demodulator coupled to the output of said first IF stage;

a second IF demodulator coupled to the output of said second IF stage;

first and second partial storages each having an input coupled to the output of said second IF demodulator;

a first electronic switch having a first input coupled to the output of said first partial storage and a second input coupled to the output of said second partial storage;

a second electronic switch having a first input coupled to the output of said first electronic switch and a second input coupled to the output of said first IF demodulator;

a video-amplifier having an input coupled to the output of said second electronic switch; and

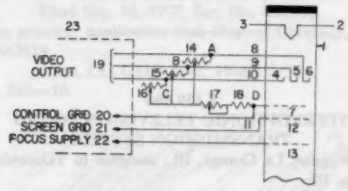
logic means for controlling said first and second electronic switches and said first and second partial storages, said logic means responsive to the vertical and horizontal synchronizing pulses of said further program and to the vertical synchronizing pulses and the horizontal flyback pulses of said first program.

4,139,861

SINGLE GUN COLOR PICTURE TUBE BRIGHTENER

Russell E. Anglin, 6157 Cottle Rd., San Jose, Calif. 95123

Filed Jan. 11, 1977, Ser. No. 758,422
Int. Cl.[2] H04N *9/18*
U.S. Cl. 358—29 **5 Claims**



1. A single gun color picture tube brightener for use with a C.R.T. having a control grid, a first color cathode to which a first color difference signal is applied, a second color cathode to which a second color difference signal is applied and a third color cathode to which a third color difference signal is applied, the brightener comprising

first potentiometer means coupling said first color cathode to said control grid,

second potentiometer means coupling said second color cathode to said control grid, and

third potentiometer means coupling said third color cathode to said control grid,

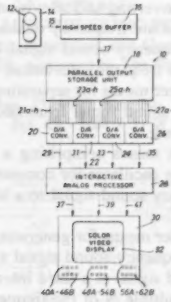
whereby said first potentiometer means, said second potentiometer means and said third potentiometer means are operative to vary the respective electron emissions of said first color cathode, said second color cathode and said third color cathode.

4,139,862

INTERACTIVE COLOR DISPLAY FOR MULTISPECTRAL IMAGERY USING CORRELATION CLUSTERING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Richard E. Haskell, Rochester, Mich.

Filed Sep. 8, 1977, Ser. No. 831,631
Int. Cl.[2] H04N *9/535*
U.S. Cl. 358—81 **31 Claims**



1. Apparatus for producing color classification maps from multispectral scanner data in which the color classification of the multispectral data can be changed in real-time, comprising:

a source of a plurality of channels of multispectral data in digital format representative of the reflectance of preselected ground resolution elements,

transform means for receiving said plurality of channels of multispectral data in digital format and providing a like plurality of analog voltage output signals, a selected instantaneous voltage of each of said signals being representative of a selected spectral signature functionally related to said reflectance of one of said ground resolution elements,

processor means responsive to said plurality of analog voltage output signals for developing primary color classification signals functionally related to said spectral signatures, said processor means including interactive control means for changing said primary color classification signals to effect a change in the color classification of the visually displayed multispectral data, and

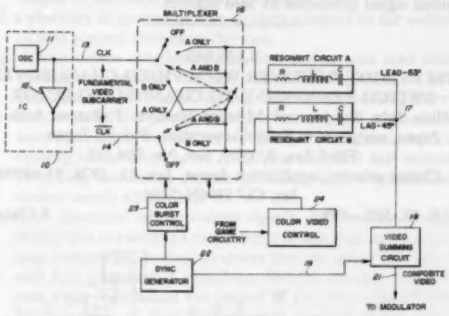
display means responsive to said primary color classification signals for producing a visual display in map form of said multispectral data.

4,139,863

CHROMA GENERATION SYSTEM

Wade B. Tuma, Campbell, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 1, 1977, Ser. No. 802,579
Int. Cl.[2] H04N *9/02*
U.S. Cl. 358—82 **7 Claims**



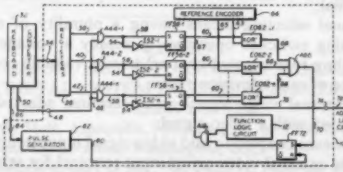
1. A chroma generation system for generating a video color subcarrier signal for decoding by a color television receiver and selectively producing a plurality of discrete colors comprising: means for generating a fundamental unmodulated signal having a frequency equal to said color signal; a plurality of phase shift networks for shifting the phase of said fundamental signal by respectively different phase angles each of said phase shift networks individually producing an output signal corresponding to different discrete colors; and electrical circuit means for combining said phase shifted output signals, said relative phase angles and amplitudes of said output signal being predetermined to produce a combined output signal corresponding to another discrete color.

4,139,864

SECURITY SYSTEM FOR A SOLID STATE DEVICE

Lawrence S. Schulman, 23 Naomi St., Hiafa, Israel 34405

Filed Jan. 14, 1976, Ser. No. 648,920
Int. Cl.[2] H04N *5/44*; G06F *1/00*
U.S. Cl. 358—188 **8 Claims**



1. A security system for a device having solid state circuit elements formed on at least a chip wherein said circuit elements perform predetermined functions, said system comprising:

(a) gating means formed on said chip for interconnecting at least two of said circuit elements in response to an enable signal;
(b) a data generator;
(c) encoding means for encoding said data from said data generator as a sequence of electric signals;
(d) a reference encoder for generating a preselected sequence of electric signals;
(e) and comparing means connected to said encoding means and said reference encoder for generating and applying said enable signal to said gating means when the sequence of signals from said encoding means matches said preselected sequence of signals from said reference encoder;

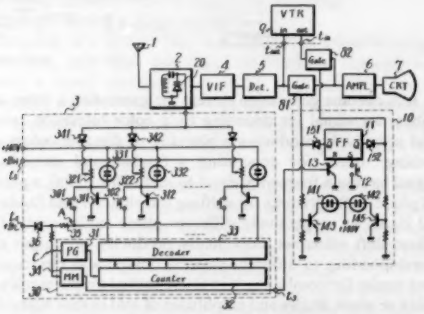
said chip having said encoding means, said reference encoder and said comparing means formed thereon; said data generator comprising a switch operable to represent a decimal digit, and converting means for converting the operation of said switch into binary signals representative of said decimal digit; said encoding means comprising a plurality of channels; each of said channels comprising a register for registering the decimal digit produced by said switch operation as binary coded decimal signals; and a bistable device connected to said register and movable from a first to a second state in response to a predetermined signal produced by said register.

4,139,865

TELEVISION RECEIVER WITH VIDEO CHANGEOVER SWITCH RESPONSIVE TO CHANNEL SELECTOR

Mikio Iida, Tokyo, and Mitsuru Hosoya, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 8, 1977, Ser. No. 804,761
Claims priority, application Japan, Jun. 11, 1976, 51-68958
Int. Cl.[2] H04N 5/44
U.S. Cl. 358—188 **6 Claims**



1. A television receiver for reproducing a picture selectively derived from a television signal or from an external video signal, comprising:

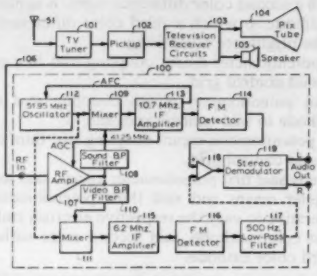
a. a television tuner having a variable reactance device as a tuning element;
b. a video detector coupled to said television tuner and provided with a video signal output terminal for producing a television video signal at said video signal output terminal;
c. channel selecting means havng a plurality of channel selecting switches operative to supply a voltage corresponding to a selected channel to said variable reactance device of said television tuner;
d. an external video signal input terminal adapted to be provided with a video signal;
e. gate means coupled to said video signal input terminal and to said external video signal input terminal for selecting a video signal therefrom to be reproduced as a picture;
f. a flip-flop circuit having first and second states for controlling said gate means;
g. a switch for setting said flip-flop circuit to a state whereby said gate means selects the video signal provided at said external video signal input terminal; and
h. reset means connected to said channel selecting switches for resetting said flip-flop circuit to a state whereby said gate means selects the video signal provided at said video signal output terminal.

4,139,866

STEREOPHONIC TELEVISION SOUND TRANSMISSION SYSTEM

Carl R. Wegner, La Grange, Ill., assignor to Telesonics, Inc., Chicago, Ill.

Continuation of Ser. No. 659,101, Feb. 18, 1976, Pat. No. 4,048,654. This application Sep. 12, 1977, Ser. No. 832,392
Int. Cl.[2] H04N 5/44
U.S. Cl. 358—198 **6 Claims**



1. A receiver for receiving stereophonic sound transmissions included on a television broadcast channel of defined frequency limits, wherein said sound transmissions comprise a sound carrier frequency-modulated by a composite signal including a first component representative of the sum of left and right source signals, a second amplitude-modulated subcarrier component representative of the difference between the left and right signals, said subcarrier component having upper and lower sidebands centered about a suppressed carrier, and a pilot component; said receiver comprising, in combination:

tuner means for converting said television broadcast channel to a fist intermediate frequency channel including a first intermediate frequency sound signal having a predetermined maximum frequency deviation;
sound bandpass filter means for separating said first intermediate frequency sound signal from said first intermediate frequency channel;
second conversion means comprising a mixer stage and a continuous wave oscillator for converting said first intermediate frequency sound signal to a second intermediate frequency;
frequency multiplier means for generating from said second intermediate frequency sound signal a third intermediate frequency sound signal at a third intermediate frequency comprising a multiple N of the frequency of said second intermediate frequency sound signal;
sound detector means adapted for response to a signal at said third intermediate frequency having a maximum deviation corresponding to a multiple N of said predetermined deviation of said first intermediate frequency sound signal for deriving from said third intermediate frequency sound signal a composite signal including said first, secondand and third components; and stereo demodulator means for deriving said left and right source signals from said composite signal.

4,139,867

METHOD FOR FAST- AND SLOW-MOTION REPRODUCTION OF VIDEO SIGNALS STORED IN A SUCCESSION OF PARALLEL TRACKS ON A RECORD MEDIUM

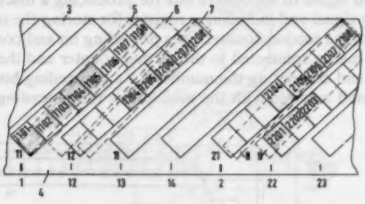
Hubert Foerster, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 16, 1977, Ser. No. 833,993

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642019

Int. Cl.[2] G11B *5/78*; H04N *5/78*

U.S. Cl. 360—10 **8 Claims**



1. A method of playing back television picture signals, recorded in a series of parallel tracks on magnetic tape, in selectively slowed or accelerated picture motion, comprising the steps of:

operating a television tape record playback device at a tape transport velocity different from the velocity of tape transport used for recording the television signals recorded thereon while operating the playback heads of said device at the same angle of scan used by said device for playback at the velocity of tape transport used for recording;

temporarily storing only those signals that are picked up by the rotary heads from said track portions which signals meet at least one predetermined requirement;

temporarily storing, together with the signals meeting said predetermined requirement, relating to a consecutive set of recorded television lines, a picture address for said set of recorded television lines, and

reading out said temporarily stored signals under playback conditions in accordance with a television signal standard in a sequence corresponding to the picture addresses temporarily stored with said signals.

4,139,868

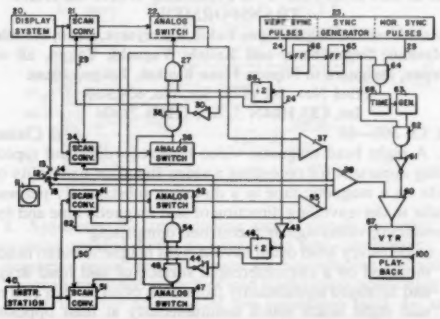
DEVICE FOR MULTIPLEXING VIDEO SIGNALS

Robert M. Eisenberg, Woodbine, and George R. Quick, Silver Spring, both of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Apr. 21, 1977, Ser. No. 789,547

Int. Cl.[2] H04N *5/78*

U.S. Cl. 360—33 **7 Claims**



1. A system that permits a video tape recorder to simultaneously record a plurality of independently occurring scenes involving slow image movement that are produced from stroke writing systems, said system comprising:

a. a plurality of first scan converting devices that convert and store the information from a stroke writing display system in a separate said scan converting device in order to allow sufficient time for the data to be written into one of said scan converting devices;

b. a plurality of first switching devices that are coupled to a specified video signal output of said first scan converting devices to provide a signal comprised of only pairs of even frames;

c. a plurality of second scan converting devices receiving information from a stroke writing system for the purpose of converting and storing the information contained in each scene in a separate said second scan converting device;

d. a plurality of second switching devices that are coupled to a specified video signal output of said second scan converting devices to provide a signal composed of only pairs of odd frames;

e. a plurality of first mixing devices that are coupled to the output of said first switching devices;

f. a plurality of second mixing devices coupled to the output of said second switching devices;

g. timing means coupled to said first and second scan converting devices, and first and second mixing devices, and said first and second switching devices for causing information to be stored and erased from said first and second scan converting devices at certain specified times and for causing information to be read from said first and second switching devices at certain specified times wherein said timing means comprises:

a sync generator whose output signals are constant timing pulses that are coupled to the input of said first and second scan converting devices to insure that the output of one of said first plurality of switching devices consists of alternate even frames and the output of the other one of said first plurality of switching devices consists of the other alternate even frames, and to insure that the output of one of said second plurality of switching devices consists of odd frames and the output of the other one of said second plurality of switching devices consists of the other alternate odd frames;

a plurality of cascaded flip-flops whose inputs are coupled to the output of said sync generator;

a plurality of dividers whose inputs are coupled to said cascaded flip-flops so that the frequency of said timing pulse may be changed; and

a plurality of first gates and inverters whose inputs are coupled to said sync generator, said cascaded flip-flops and said dividers and whose outputs are coupled to said first and second scan converting devices and said first and second switching devices;

h. code generating means for causing a code to be written on the video tape that is being recorded on said video recorder, whereby information that was stored in said first and second scan converting devices will be multiplexed on an odd even frame basis and mixed with said coded signal so that a plurality of independently occurring scenes may be synchronously recorded at the same time.

4,139,869

HIGH-RESOLUTION INFORMATION STORAGE AND RETRIEVAL SYSTEM INCLUDING ELECTRONIC REFRESH BUFFER

Arthur W. Holt, Annapolis, Md., assignor to Videofax Communications Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 742,171, Nov. 16, 1976, Pat. No. 4,090,224. This application Jan. 19, 1978, Ser. No. 871,084

Int. Cl.[2] H04N *1/36*

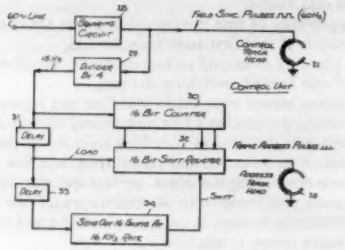
U.S. Cl. 360—35 **8 Claims**

1. A high-resolution video filing system for storing and

retrieving documentary information, said system having a storage mode wherein each document to be filed is electro-optically scanned and magnetically recorded and a retrieval mode in which a selected recording is played back and displayed to recreate the document in readable form, said system comprising:

A. a high-resolution video camera for scanning each document to be filed to produce an analog video signal representing a single image frame having a predetermined number of scan lines in excess of 1000;

B. a low-resolution magnetic tape video recorder having a rotating head assembly whose heads in the storage mode act to successively sweep across a moving magnetic tape to record thereon, and in the retrieval mode to play back the recording on the moving tape presented to the heads said tape is pre-recorded to provide a control track for synchronizing the operation of said camera with said recorder and an address track for locating the image frame recorded on said tape;



C. a high-resolution video display monitor means capable of recreating a selected document in response to a video signal representing the image frame derived from the selected document;

D. electronic switching means coupled to said camera in the storage mode to divide said video signal representing a single image frame into a series of fields each having the same number of scan lines, and to sequentially feed said fields to the heads of the recorder to record said fields along a like series of parallel transverse tracks to thereby produce a set thereof representing a frame image of said document;

E. an electronic refresh buffer having a memory; and

F. means in the retrieval mode to operate said recorder to play back the set of tracks representing the frame image of the document with selection means for retrieval and to write the resultant track signals into said buffer, the contents of said buffer then being read out repeatedly into said display monitor to display the selected document.

4,139,870

CIRCUIT FOR DEMODULATING A PULSE WIDTH MODULATED SIGNAL

Katsuichi Tachi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,632
Claims priority, application Japan, Mar. 18, 1976, 51-29567
Int. Cl.[2] G11B *5/09, 15/18*
U.S. Cl. 360—43 **11 Claims**

1. A circuit for demodulating "0" and "1" bits of a pulse width modulated binary coded signal having a level transition at the end of each coded pulse width, the circuit comprising:

a circuit responsive to the level transition at the end of each coded pulse width for providing a corresponding edge pulse signal;

a circuit for quantizing each bit of the pulse width modulated signal into a pulse number modulated signal, said quantizing circuit including

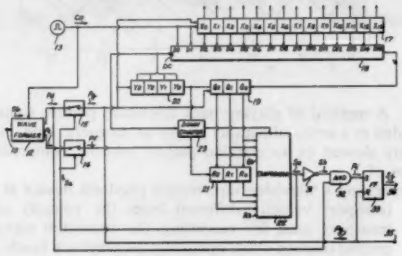
a generator of clock pulses,

a first binary counter connected to the generator for counting the clock pulses in a plurality of digit stages,

a second binary counter having fewer digit stages than the first counter, and

data selector means responsive to overflow signals from the highest digit stage of the second counter for progressively connecting the second counter to the generator and successive digit stages of the first counter whereby the number in the second counter corresponds to selected higher digits of the number of clock pulses counted in the first counter;

a comparator circuit responsive to the pulse number modulated signal of successive bits for producing a discrimination signal and including a register for storing the number from the second counter for a preceding bit and comparator means connected to the second counter and the register and comparing the number for a succeeding bit in the second counter with the number for the preceding bit in



the register for producing the discrimination signal, said comparator means comprising

a third binary counter connected to the highest digit stage of the second counter for counting the overflow signals therefrom;

a downcounter connected to the third counter and storing the number therefrom for a preceding bit (B_j) and connected to be decremented with the overflow signals therefrom for providing a digit correction signal indicating the relative value of the numbers in the second counter and register; and

a comparator responsive to the numbers in the second counter and the register and the digit correction signal from the downcounter for providing the discrimination signal; and

a logic circuit responsive to the edge pulse signal and the discrimination signal for providing a demodulation signal for each of one of the "0" and "1" bits.

4,139,871

EIGHT-HEAD MAGNETIC VIDEO TAPE RECORDING AND REPRODUCING APPARATUS WITH ROTARY TRANSFORMER

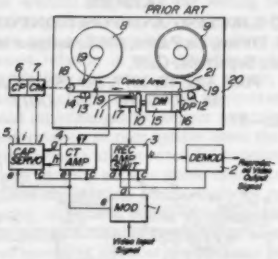
Takeshi Yoshida, Sagamihara; Yukio Kameyama, Hino; Hitoshi Masuko, Sagamihara, and Keiichi Yaguchi, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Nov. 24, 1975, Ser. No. 634,910
Int. Cl.[2] H04N *5/785*; G11B *21/06*
U.S. Cl. 360—64 **12 Claims**

1. A eight head magnetic video tape recording and reproducing apparatus for recording a video signal on a plurality of tracks on a magnetic tape in a direction substantially perpendicular to the travelling direction of said magnetic tape and for reproducing video signals therefrom, comprising

a single rotary head drum having eight magnetic video heads mounted on a circumferential surface of said head drum and arranged equidistantly from each other so that two of said eight heads touch simultaneously at least opposite ends of each of said video tracks on said magnetic tape, and

first and second rotary signal transformer means having substantially the same configuration and substantially the same size for respectively transferring video signals to and from respective video head groups substantially under the same transferring condition, each of which groups comprises every other one of said eight magnetic video heads, each of said rotary signal transformer means having a rotary part which rotates together with said rotary head drum and which has four rotary windings connected respectively to said every other one of said eight magnetic video heads and a fixed part which has a fixed winding for coupling successively to said four rotary windings by



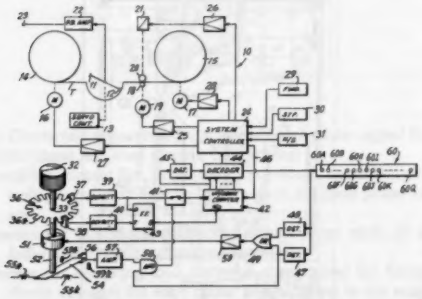
means of being opposed successively to each other in a radial direction of rotation, said rotary windings being wound respectively in succession around eight protruding poles which are arranged equidistantly from an axis of rotation and every four of which are arranged equidistantly from each other respectively on a rotor rotating together with said rotary head drum, said fixed windings being wound respectively around protruding poles which are arranged on a stator equidistantly from the axis of rotation and to which respective ones of said protruding poles of said rotor are opposed successively when said rotor rotates.

4,139,872

VIDEO SIGNAL REPRODUCING APPARATUS WITH A TRACK SEARCHING ARRANGEMENT

Katsuichi Tachi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1977, Ser. No. 833,709
Claims priority, application Japan, Sep. 15, 1976, 51-110387
Int. Cl.[2] G11B *15/18, 17/02*
U.S. Cl. 360—72 **16 Claims**



1. Apparatus for reproducing video signals recorded in successive parallel tracks on a magnetic tape, comprising:

magnetic signal sensing means for reproducing the video signals recorded in each of said tracks upon positioning of said tape for scanning of the respective track by said sensing means

tape transport means for transporting said tape relative to said sensing means and thereby causing the latter to scan said tracks in succession for reproducing the video signals respectively recorded therein at a rate dependent on the speed at which the the tape is transported;

track searching means including selector means actuable for selecting a track searching mode of the apparatus, and a manually rotatable wheel; and

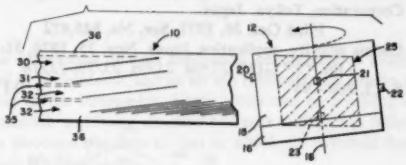
control means for establishing an initial predetermined speed and direction of transport of said tape by said tape transport means upon actuation of said selector means regardless of the instantaneous angular position of said wheel and for thereafter varying the speed and direction of said transport of the tape from said initial speed and direction in accordance with the direction and angular extent of any rotation of said wheel from the position of the latter at said selecting of the track searching mode.

4,139,873

METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING

Alexander R. Maxey, Redwood City, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Feb. 1, 1978, Ser. No. 874,118
Int. Cl.[2] G11B *21/04, 15/66*
U.S. Cl. 360—85 **6 Claims**



1. In a video tape recorder, a rotary scanner comprising means defining an axis of rotation for a plurality of transducers,

a plurality of transducer heads no less than three,

means mounting said heads spaced along and around said axis of rotation whereby each head scans along a different circular orbit and at a different time across a segment of a cylindrical surface defined by the plural orbits,

means moving a recording medium across a segment of such cylindrical surface in timed relation to scanning rotation of said heads and at an angle to said axis of rotation such that each head traces a series of helical scans on the medium within non-overlapping paths along the direction of motion of the medium,

and means for rotating said heads at a speed sufficient to separate each scan of a head along the corresponding path.

4,139,874

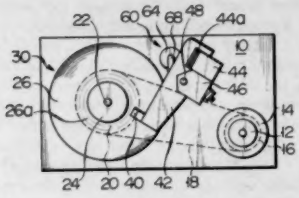
MAGNETIC DISC RECORDING AND/OR REPRODUCING APPARATUS WITH MEANS TO DAMP AND LOCK DISK ROTATION

Fumitake Shiraishi, Hamura, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 23, 1977, Ser. No. 835,953
Claims priority, application Japan, Sep. 24, 1976, 51-128278
Int. Cl.[2] G11B *17/00, 21/08, 25/04*
U.S. Cl. 360—86 **7 Claims**

1. A magnetic disc recording and/or reproducing apparatus comprising a body of revolution including a flange and a magnetic disc attached to said flange and capable of rotation; a revolution controlling mechanism to rotate said body of revolution freely when the apparatus is in a power-on state and to damp the rotation of said magnetic disc and keep thereof in a locked position when the apparatus is in the power-off state; a rocking arm fitted at the tip end thereof with at least one magnetic head and capable of rocking so as to allow said magnetic head to shift along said magnetic disc; an actuator for

driving said rocking arm through a carriage housing with a stopper; an arm lock mechanism for turning said rocking arm, when the apparatus is in a power-off state, to shift said magnetic head along said disc on to a landing zone defined in said disc as well as to thrust said rocking arm against said stopper provided within said carriage housing, thereby locking said rocking arm and hence said magnetic head.

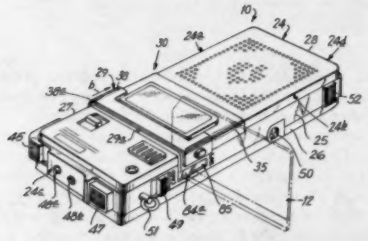


4,139,875

CASSETTE AND CARD RECORDING AND/OR REPRODUCING APPARATUS

Shokichi Tatara, Sagamihara; Kenkichi Umeda, Tokyo, and Hiroshi Takahashi, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,672
Claims priority, application Japan, Nov. 25, 1976, 51-141520
Int. Cl.[2] G11B *25/04, 25/06, 25/10, 15/16*
U.S. Cl. 360—94 **11 Claims**



1. An apparatus for recording and/or reproducing signals on a magnetic recording medium in the form of a tape contained in a tape cassette and being movable in a run along a side of the cassette, or in the form of a stripe affixed to a card parallel to an edge portion thereof, said apparatus comprising:

a housing having a recess which, in a cassette mode of operation of the apparatus, is adapted to receive the tape cassette with said run of the tape therein being coincident with a recording medium transport tape extending across said recess, and means which, in a card mode of operation of the apparatus, is adapted to guide a card with said stripe forming the recording medium thereon in said transport path;

a rotatable capstan extending into said recess adjacent said transport path for engagement with a tape or card therein;

a head carriage mounted in said housing for reciprocal movements in directions normal to said transport path between operative and inoperative positions;

magnetic head means on said carriage engageable with the magnetic recording medium in said transport path when said carriage is in said operative position;

pinch roller means cooperating with said capstan, upon movement of said head carriage to said operative position thereof, for driving the tape or card therebetween along said transport path;

a tape guide member urged to project into said transport path for guiding the tape in such path adjacent said head means in response to movement of said carriage to said operative position in said cassette mode of operation; and

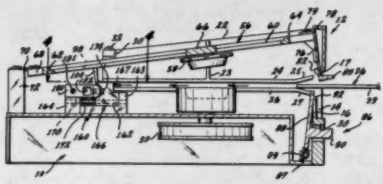
mode change-over means selectively actuable to first and second positions for establishing said cassette mode of operation and said card mode of operation, respectively, said mode change-over means including means blocking the projection of said tape guide member into said transport path when said carriage is moved to its operative position in said card mode of operation so as to avoid engagement of said tape guide member with a card in said transport path.

4,139,876

RECORD EJECTING AND POSITIONING ASSEMBLY

William M. Owens, La Palma, Calif., assignor to Micro Peripherals, Inc., Sepulveda, Calif.

Filed Aug. 18, 1977, Ser. No. 825,526
Int. Cl.[2] G11B *17/02, 5/012*
U.S. Cl. 360—97 **7 Claims**



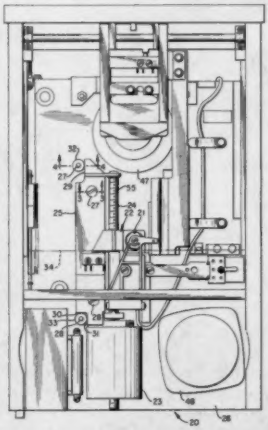
1. In an apparatus having record means and record drive means, the apparatus including a door which is openable for insertion of the record means, ejector means engaged by the record means upon insertion thereof, latch means for latching the ejector means when the record has been inserted to a predetermined position, the ejector means acting to eject the record means unless the ejector means has become latched and means whereby the ejector means is unlatched by closing the door.

4,139,877

MODULAR READ/WRITE HEAD CARRIAGE WITH DRIVE FOR FLOPPY DISK UNITS

Robert H. Townsend, Box 100, Oxford, Ark. 72565

Filed Nov. 4, 1977, Ser. No. 848,446
Int. Cl.[2] G11B *21/08, 5/55*
U.S. Cl. 360—106 **17 Claims**



1. In a random access information storage system employing magnetic disks with recording tracks and an information trans-

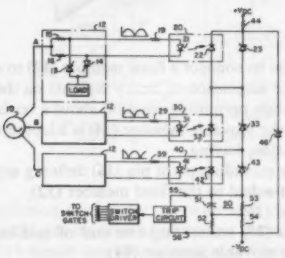
ferring head: a moveable carriage mounting said information transferring head; stepping motor drive means; lead screw means driven by said stepping motor drive means; and a nut segment mounted on said moveable carriage; said nut segment having teeth that mate teeth of said lead screw means and engageable with said lead screw means when said carriage is mounted in place for operation in said random access information storage system; and resilient bias structure means on said moveable carriage in position to maintain said nut segment in drive engagement with said lead screw means when said moveable carriage is installed in place for operation; said moveable carriage with said information transferring head being in the form of an interchangeable stepper motor module for removal and replacement without distrubing the setting of the lead screw means and stepping motor drive means; wherein said lead screw means and said stepping motor drive means are assembled in preset relation in said interchangeable stepper motor modules including mounting member means; alignment registration means structured for precise predetermined position setting of said interchangeable stepper motor modules in random access information storage system units; the magnetic disks with recording tracks are mounted for rotation on a hub structure for driven rotation about a stable center axis of rotation; said alignment registration means includes registration structure presenting alignment points in said system; and a distance from the hub structure center axis of rotation location point means; said mounting member means has a plurality of accurate registration surfaces positioned to be in registration alignment contact with respective points of said points; and, wherein said registration structure presenting alignment points are line contacts of two registration banking buttons accurately located on a mounting plate of said system relative to the hub structure axis of rotation.

4,139,878

APPARATUS FOR SENSING A HIGH PHASE SIGNAL FROM A MULTI-PHASE AC LOAD CIRCUIT

Kenneth C. Shuey, Cridersville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 2, 1977, Ser. No. 802,930
Int. Cl.² H02H *3/08*
U.S. Cl. 361—93 **3 Claims**



1. Electronic apparatus, for sensing a high phase signal from a multi-phase AC load circuit, comprising:

rectifier means for producing individual rectified phase voltages proportional to load current for each phase voltage;

means for generating radiation signals from each of said individual rectified phase voltages;

means for receiving said radiation signals and for forming direct voltages for each phase proportional to the magnitude of each of said radiation signals, said means for receiving said radiation signals comprising a device for each phase mutually interconnected in a series string with means for applying direct current thereto;

voltage detection means comprising a threshold voltage detector device for each phase direct voltage electrically parallel with said means for receiving said radiation signals for each phase, said voltage detection devices being mutually connected in a series string so as to be rendered conductive upon the current of a signal at one of said means for receiving said radiation signals indicative of a high phase signal;

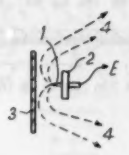
means for developing at output terminals; and said output terminals a direct voltage upon occurrence of a predetermined overcurrent as indicated by conduction of any one or more of said means for receiving said radiation signals.

4,139,879

INSTRUMENT FOR AIR IONIZATION

Cecil A. Laws, P.O. Box 1, Oxted, Surrey, England

Filed Feb. 6, 1978, Ser. No. 875,232
Claims priority, application United Kingdom, Feb. 5, 1977, 4824/77; Feb. 17, 1977, 6602/77
Int. Cl.² H01T *19/00*
U.S. Cl. 361—230 **10 Claims**



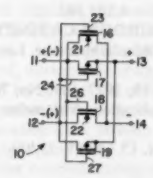
1. An instrument for air ionization comprising a needle mounted in an insulator, and an air ion reflector, the needle, in operation of the instrument, being connected to a source of high potential, and being directed towards said air ion reflector, in a direction opposite to that in which the eventual flow of air ions is required.

4,139,880

CMOS POLARITY REVERSAL CIRCUIT

Richard W. Ulmer, Austin, Tex., and Robert R. Beutler, Beaverton, Oreg., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1977, Ser. No. 838,705
Int. Cl.² H01L *27/00*
U.S. Cl. 361—246 **8 Claims**



1. A CMOS polarity reversal circuit having first and second input terminals and first and second output terminals, comprising: a first P-channel MOS device having a source, drain and gate, the source being coupled to the first input terminal, the drain being coupled to the first output terminal, the gate being coupled to the second input terminal; a first N-channel MOS device having a source, drain and gate, the source being coupled to the first input terminal, the drain being coupled to the second output terminal, the gate being coupled to the second input terminal; a second P-channel MOS device having a source, drain and gate, the source being coupled to the second input terminal, the drain being coupled to the first output terminal, the gate being coupled to the first input terminal; and a second N-channel MOS device having a source, drain and gate, the source being coupled to the second input terminal, the drain being coupled to the second output terminal, and the gate being coupled to the first input terminal, thereby forming a

circuit which will always provide a desired voltage polarity at the output terminals regardless of polarity of voltage applied to the input terminals.

4,139,881

CIRCUIT BOARD ASSEMBLY AND METHOD OF MANUFACTURING THE SAME

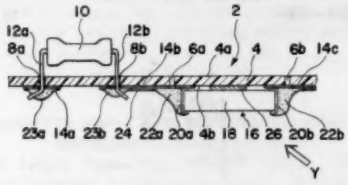
Teruo Shimizu, Katano, and Tetsuo Matsuoka, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 16, 1977, Ser. No. 861,447

Claims priority, application Japan, Dec. 17, 1976, 51/152516

Int. Cl.² H05K *1/04*

U.S. Cl. 361—400 **6 Claims**



1. A circuit board assembly comprising in combination:

an electrically insulating circuit board having at least one surface thereof laminated with conductive sheet in a predetermined pattern, and having at least one sheet in a predetermined pattern, and having at least one aperture formed in said circuit board;

at least one article having body and at least one surface element secured to said body, said surface element being connectable to said circuit board over said one surface thereof adjacent said one aperture;

solder bead deposited at corner portion defined between the surface element and part of said conductive sheet by immersion of said one surface of the circuit board into a pool of molten solder so that said aperture releases bubbles produced in said molten solder under said circuit board for filling said corner with solder.

4,139,882

BATHROOM CABINET

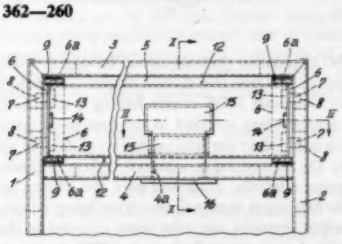
Walter Schneider, 54 Wildenbühlstrasse, Langnau am Albis, (Kt. Zurich), Switzerland

Filed Apr. 19, 1977, Ser. No. 788,765

Claims priority, application Switzerland, Apr. 23, 1976, 5104/76

Int. Cl.² F21V *33/00*

U.S. Cl. 362—260 **4 Claims**



1. A bathroom cabinet having an illuminated shelf comprising:

(a) a pair of oppositely disposed side walls of the cabinet, each having internal and external faces;

(b) means defining recesses formed in the internal faces of said side walls;

(c) a pair of brackets formed of an electrically insulating material;

(d) pins formed on said brackets and engaged in formlocking manner in said recesses thereby to hold said brackets against said side walls;

(e) guide ribs formed on the internal faces of said brackets;

(f) a lighting assembly including a lighting assembly support which is channel-shaped in cross section having a pair of spaced parallel leg portions and a connecting web portion, the ends of said leg portions being engaged by said guide ribs;

(g) resilient tongues formed on said brackets and extending beyond said web portion; and

(h) a translucent lighting assembly cover frictionally held by said resilient tongues in a position covering the lighting assembly.

4,139,883

ROTARY JOINT, PARTICULARLY TO SUSPEND HEAVY METAL WEIGHTS FROM A CEILING, SUCH AS AN OPERATING ROOM LIGHT

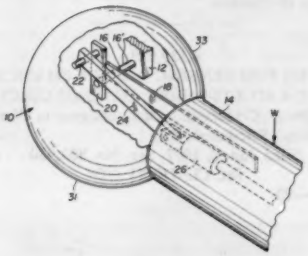
Karl F. Ilzig, Hanau am Main, and Hans Scheidemann, Maintal, both of Fed. Rep. of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Jun. 8, 1977, Ser. No. 804,771

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627514

Int. Cl.² F21S *1/04, 3/02;* A61B *1/06*

U.S. Cl. 362—404 **10 Claims**



1. Rotary joint to connect a fixed member (12) to a movable member (14) for suspension of heavy weights on the movable member (14) while permitting rotation about a horizontal axis (16'), in which the movable member (14) is adapted to pivot in a vertical direction, having

a horizonally extending pivot pin (16) defining said axis and securely attached to the fixed member (12);

a balance rod (24);

spring means (26) connecting one end of said balance rod (24) to the movable member (14);

a pivot rod (18) secured to said movable member (14), extending toward said pivot pin and pivotably connected with said pivot pin to provide a pivotal connection between said pin (16) and hence said fixed member (12) and said movable member (14);

a fixed connection element (20), non-rotatably secured to said pivot pin (16) and extending transversely to the pivot axis (16') of said pivot pin (16);

and pivot connection means (22) eccentrically with respect to said pivot axis (16') - positioned on said connecting element (20) and having an auxiliary pivot axis parallel to said horizontal axis (16'), the other end of the balance rod (24) being pivotably connected to said pivot connection means (22) and hence eccentrically to said fixed element (20) to secure the balance rod (24) eccentrically with respect to said axis (16') while permitting pivoting of said balance rod (24) about an axis parallel to said axis (16').

4,139,884
LUMINAIRE LOWERING DEVICE

Richard L. Thompson, Hendersonville, N.C., assignor to General Electric Company

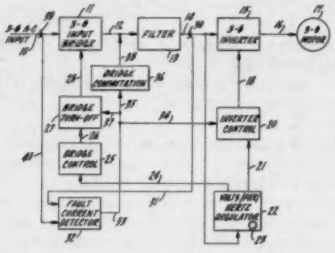
Filed Aug. 22, 1977, Ser. No. 826,497
Int. Cl.[2] F21S 1/02
U.S. Cl. 362—430 9 Claims

1. Luminaire hoist apparatus comprising, in combination, a pole, a fixed support secured at the top of said pole and having latch locking means, a luminaire mounting member, hoist means connected to said mounting member and said pole for raising said mounting member to an upper operative position and lowering said mounting member to a lower service position on said pole, cam means secured to said mounting member for movement therewith, said cam means comprising a tubular member having upper and lower recesses each formed with a cam surface, an elongated latch member extending at its lower end into said tubular cam member and axially movable relative thereto, and having portions engageable with said upper and lower cam surfaces, resilient means associated with said tubular member urging said latch member upwardly from said tubular cam member, said latch member coacting with said cam means for engaging said latch locking means when said mounting member is raised to its upper position and for disengaging said locking means when said mounting member is slightly raised from said upper position for permitting said mounting member to be lowered to its service position.

4,139,885
FAULT PROTECTION CIRCUIT

John K. Overzet, Elmhurst, and George H. Studtmann, Mount Prospect, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 20, 1977, Ser. No. 808,203
Int. Cl.[2] H02M 1/18
U.S. Cl. 363—58 22 Claims

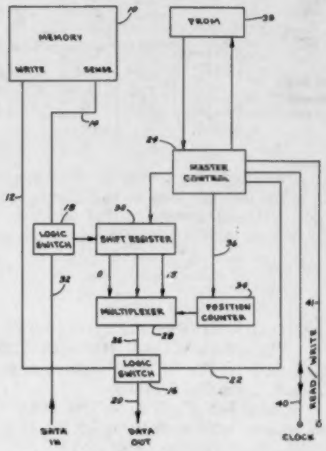


1. A protection system for use with an a-c energy supply system including an inverter having a first plurality of switches connected to supply a-c output energy, a filter connected to pass d-c energy toward the inverter, an input bridge having a second plurality of switches connected to receive a-c input energy and to pass d-c energy to the filter, and means for regulating operation of the input bridge and the inverter, which protection system comprises a fault current detector, connected to compare the level of the current passed from the filter toward the inverter against a preset reference, to provide a fault signal to turn on all the switches in the inverter, thus sharing the excess current, and simultaneously to interrupt energy transfer through the input bridge toward the inverter, and in which the filter passes a series current toward the inverter, and the level of this series current is sensed to provide a current level signal to the fault current detector, characterized in that the second plurality of switches in the input bridge are turned on by gate signals and are turned off by a reverse voltage, in which energy transfer through the input bridge is interrupted by removing the gate signals and applying the reverse voltage.

4,139,886
FAULT TOLERANT SYSTEM FOR BUBBLE MEMORIES

Philip E. White, Minneapolis, and Robert C. Rust, S. Saint Paul, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 28, 1977, Ser. No. 846,290
Int. Cl.[2] G11C 19/08
U.S. Cl. 365—1 1 Claim



1. A fault tolerant system for bubble memories comprising:
a major loop — minor loop bubble memory having additional minor loops so that nominal memory size is retained in the presence of defects,
a memory element containing a defect map of said bubble memory,
a shift register of a predetermined length related to the maximum number of allowable bubble memory defects,
a multiplexor having its input lines connected to the content locations of the shift register,
a position counter connected to the multiplexor for controlling the selected input from the shift register, and
a master control device connected with said memory element, said shift register and said position counter for controlling the flow of data read from or written into said bubble memory,
said master control, during a writting operation, causing the shift register to be shifted for each input data cycle and causing the position counter to be incremented for each bad memory location to be written while the shift register remains unchanged, and
wherein said master control, during a read operation, causing the shift register to be filled to capacity when data comes from memory with the position counter initially set for its maximum numbered position and when the shift register is filled to capacity said master control causing said shift register to be shifted for each good data bit from memory and said position counter decremented for each bad data bit from memory.

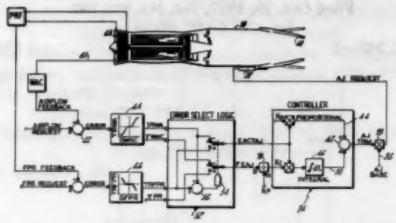
4,139,887
DYNAMIC COMPENSATION FOR MULTI-LOOP CONTROLS

Adelard Levesque, Jr., North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 28, 1977, Ser. No. 792,091
Int. Cl.[2] G06G 7/66; F02C 9/02
U.S. Cl. 364—105 4 Claims

1. A proportional-integral type control system having a controller for a single actuator responding to at least two distinct measured variables having unique, but different time

responses, means for generating the error of each of said variables from a given norm, means selecting one of said errors, said controller responsive to said selective error to control said actuator to take corrective action to correct for said error for



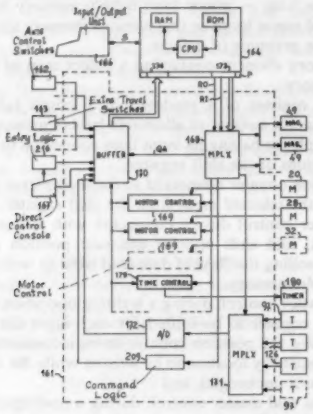
nulling said selected error, means for synchronously adjusting the gain in the forward loop of said integral portion of said proportional-integral control so that said gain matches the response time of said variable for which the error is being nulled.

4,139,888

AUTOADAPTIVE WORKING CENTER FOR PROGRAMMABLE AUTOMATION

Mario Salmon, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Feb. 17, 1977, Ser. No. 769,587
Claims priority, application Italy, Sep. 14, 1976, 69228 A/76
Int. Cl.[2] G05B *19/18*
U.S. Cl. 364—105 **13 Claims**



1. In an autoadaptive working center for programmable automation having at least one operating head for performing work on a workpiece, servomotor means for moving said operating head along a predetermined path in at least two coordinates, a central processing unit comprising a program unit for storing the working center program and a processing unit for executing the working center program, said program unit additionally storing position data for defining the path of said operating head and process data for defining the operations to be performed by said operating head at predetermined points along the path of said operating head, and a control unit responsive to the position and process data in said program unit for controlling the operation of said servomotor means, wherein the improvement comprises:

a plurality of transducers mounted on said operating head for sensing external operating conditions of said operating head and generating signals representative of these external operating conditions;

selection means responsive to said program unit for selecting at least a particular one of said plurality of transducers;

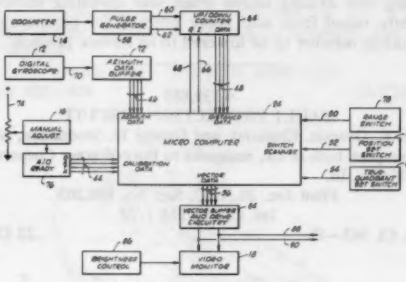
transmitting means connected to said plurality of transducers and responsive to said selection means for transmitting the signal representative of the external operation condition sensed by said particular one of said plurality of transducers to said central processing unit, wherein said processing unit further comprises addressing means connected to said transmitting means for generating addresses corresponding to the signals representative of the external operating conditions, said addressing means being connected to said program unit for addressing the next subroutine stored in said program unit in accordance with the signal transmitted by said transmitting means to said central processing unit.

4,139,889

APPARATUS FOR VEHICLE POSITION INDICATION

George W. Ingels, 500 E. Robinson, Norman, Okla. 73069

Continuation-in-part of Ser. No. 477,283, Jun. 7, 1974, Pat. No. 4,024,493. This application May 17, 1977, Ser. No. 797,763
Int. Cl.[2] G06F *15/50*; G09B *29/10*
U.S. Cl. 364—460 **14 Claims**



1. A system for maintaining position surveillance of moving vehicles, comprising:

means generating a pulse output proportional to distance traveled by said vehicle;

counter means receiving said pulse output to generate periodically a distance digital word data output;

means generating an azimuth digital word data output indicating the degree of vehicle heading;

microcomputer means receiving input of said distance digital word and said azimuth digital word data outputs to provide output of vector digital data, said microcomputer means including a central processing unit receiving selective input of said distance and azimuth digital word data to generate output of said vector digital word data, and a read only memory means having a selected, resident program that is connected to control the logic processing of said central processing unit; and

video monitor means receiving said vector digital word data output to continually display relative vehicle position.

4,139,890

BAR GAUGE PLOTTING AND DISPLAY SYSTEM

Ronald W. Yerkes, Orchard Park, N.Y.; Joel L. Hoffner, Johnstown; Tom L. Galanis, Bethlehem, both of Pa., and Richard S. Hostetter, Jr., Orchard Park, N.Y., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 17, 1977, Ser. No. 778,532
Int. Cl.[2] B21B *37/00*; G06F *15/46*
U.S. Cl. 364—472 **12 Claims**

1. A profile plotting and display system for an electro-optical system which gages two dimensions of a moving bar at various peripheral positions of the bar, comprising:

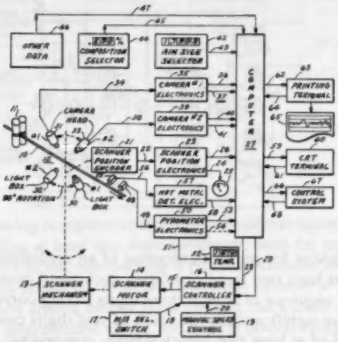
(a) first and second electronic camera head means aimed to

receive first and second images of the moving bar and generate corresponding camera signals;

(b) scanner means adapted to scan the first and second electronic camera head means about the lateral profile of the bar a prescribed angular displacement while generating a scanner position signal;

(c) means for controlling movement of the scanner means;

(d) electronic circuit means including means for processing the first and second camera signals to produce corresponding first and second bar size pulses;



(e) calculator means assimilating the first and second bar size pulses and the scanner position signal for:

1. plotting bar profile using first and second bar size pulses and scanner position signals, and
2. storing the bar profile data and, if desired, the first and second bar size data; and

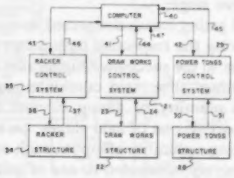
(f) means for utilizing the stored data to indicate and/or record bar profile and, if desired, each bar size measurement.

4,139,891

ELEVATOR LOAD CONTROL ARRANGEMENT FOR A COMPUTER-CONTROLLED OIL DRILLING RIG

Loren B. Sheldon, Houston, Tex.; James R. Tomashek, Wood Dale, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to BJ-Hughes Inc., Long Beach, Calif.

Filed Mar. 15, 1977, Ser. No. 777,786
Int. Cl.[2] E21B *19/00;* **G06F** *15/20*
U.S. Cl. 364—567 **9 Claims**



1. In an oil drilling rig having a traveling block arrangement, including an elevator, adapted to support a length of drill string as it is lowered into or lifted out of a well bore and having load sensor means for continuously generating an electrical signal representative of the load imposed on the traveling block arrangement, wherein the improvement comprises:

first sampling means for sampling the signal generated by the sensor at a predetermined time prior to the elevator acquiring a load; and,

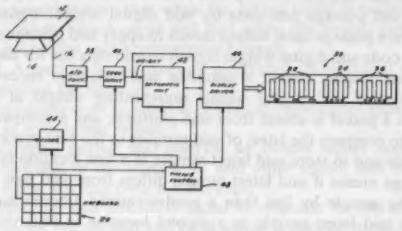
comparator means for generating a signal functionally related to the difference between the signal sampled by the first sampling means and the signal generated by the load sensor means and representative of the instantaneous net weight supported by the traveling block arrangement.

4,139,892

ELECTRONIC POSTAGE SCALE

Dumitru D. Gudea, Chicago; Thomas L. Bryant, Forest Park, and Wan-On Chan, Des Plaines, all of Ill., assignors to Triner Scale and Manufacturing Company, Chicago, Ill.

Filed Jul. 18, 1977, Ser. No. 816,724
Int. Cl.[2] G01G *19/413;* **G06F** *11/02*
U.S. Cl. 364—567 **10 Claims**



2. An electronic postage scale for producing an indication of the postage required to send a parcel to a preselected destination via a preselected class of service in accordance with the weight of said parcel, comprising a weighing platform for receiving said parcel; a load cell for supporting said platform to produce an analog weight signal representing the sum of the weight of a parcel and said platform; converter means for converting said analog weight signal to a digital weight signal; means for supplying repeated samples of said digital weight signal; comparator means for comparing the latest sample of said digital weight signal to the immediately preceding sample of said digital weight signal; means for using said latest sample of said digital weight signal as a reference level if said latest sample of said digital weight signal does not differ from said immediately preceding sample of said digital weight signal by more than a predetermined amount in the absence of a parcel on said platform; subtracting means for subtracting said reference level from said latest sample of said digital weight signal to produce a weight data signal representing the difference between the load, which is formed of said parcel and said platform, and the reference level; keyboard means selectively operable to provide representations of a class of service and of a destination zone for said parcel; coding means for producing digital codes corresponding to the operated keyboard means; means for storing data representing the postage rate per unit of weight of a parcel for each selectable class of service and for each selectable destination zone within each said class; multiplying means for receiving said weight data signal and the postage rate data corresponding to the selected class and destination zone and for producing a digital postage signal proportional to the produce of said weight data signal and said postage rate data; and display means selectively responsive to said digital postage signal, the digital code corresponding to said selected destination zone and said weight data signal for selectively displaying the postage required to send said parcel to said preselected destination, the destination zone and the weight of said parcel.

9. An electronic postage scale having a weighing platform for weighing a parcel to be sent, a keyboard comprised of selectable keys for selecting the class of service by which said parcel is to be sent and the destination zone for said parcel, and display means for displaying at least the postage required to send said parcel to said selected destination zone via said selected class of service, said electronic postage scale comprising means for producing digital signals representing the weight of said parcel; coding means for generating digital codes representing the particular keys which are selected; a data bus for receiving and transmitting said weight signal and said key codes; storage means coupled to said data bus for storing said weight signal and said key codes in addressable locations therein and for reading out said weight signal and said key codes from said addressable locations; read only memory means coupled to said data bus and containing tables therein

representing the postage rate per unit weight for each destination zone in each class of service; and micro-processor means coupled to said data bus and having a set of instructions effective to access the locations in said storage means to read out the digital weight signals and the key codes therefrom and to access the read only memory means to read out the postage rate data corresponding to the class and zone as represented by said key codes, said micro-processor means including an arithmetic unit operative in response to instructions to multiply said read out postage rate data by said digital weight signals to produce postage data; output means to apply said postage data, zone code and digital weight signals to said data bus for display by said display means; a sampling unit to obtain successive samples of said digital signals representing weight at least when a parcel is absent from said platform; and a comparator unit to compare the latest of said samples to the next preceding sample and to store said latest sample in a first location in said storage means if said latest sample differs from said next preceding sample by less than a predetermined amount and to store said latest sample in a second location in said storage means if said latest sample differs from said next preceding sample by more than said predetermined amount; and wherein said arithmetic unit is operative in response to further instructions to subtract the contents of said first location from the contents of said second location to derive said digital weight signals.

4,139,893

CALCULATOR PROGRAM SECURITY SYSTEM

Sydney W. Poland, Arlington, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 783,903, Apr. 1, 1977, which is a continuation-in-part of Ser. No. 714,464, Aug. 16, 1976. This application Aug. 22, 1977, Ser. No. 826,789

Int. Cl.[2] G06F *15/02*

U.S. Cl. 364—706 **11 Claims**

1. An electronic calculator system comprising:

(a) input means for inputting numeric data and functions,

(b) a program memory for storing a calculator program inputted at said input means,

(c) read-only-memory for storing a calculator program,

(d) means responsive to said input means for selectively controlling said calculator system in accordance with the calculator program stored in said program memory means or the calculator program stored in said read-only memory means,

(e) security code means associated with said read-only-memory means for indicating by the setting thereof whether or not the program stored in said read-only-memory means is a proprietary program,

(f) down loading means for reading a program out of said read-only-memory means and into said program memory means in response to a selected input at said input means provided the setting of said security code means indicates that the calculator program in said read-only-memory means is non-proprietary.

4,139,894

MULTI-DIGIT ARITHMETIC LOGIC CIRCUIT FOR FAST PARALLEL EXECUTION

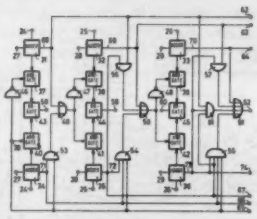
Jogchum Reitsma, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1977, Ser. No. 769,414

Claims priority, application Netherlands, Feb. 23, 1976, 7601785

Int. Cl.[2] G06F *7/50*

U.S. Cl. 364—788 **3 Claims**



1. A device for parallel execution of an arithmetical operation on at least two input quantities, each input quantity comprising a sequence of at least three digits having corresponding successive significance levels, each of said digits comprising a sequence of at least two binary signals, comprising:

a plurality of stages ordered in series according to the respective significance level of said digits, the lowest ordered stage in series corresponding to the least significant digit, the highest ordered stage in series corresponding to the most significant digit, each of said stages comprising: an input for receiving signals representing each of said input digits of corresponding significance level; an input for an input carry signal; a plurality of outputs for output carry signals; means for generating all possible output carry signals on said outputs depending upon said input digits received and said input carry signal; and means for generating and transmitting a signal representing a result digit based upon said input digits received and upon the prevailing input carry signal;

a cycle control element connected to each of said stages and operative for driving said means for generating all possible output carry signals in each of said stages in a first time interval upon reception of said input digits, the value of each of said output carry signals depending upon the value of the input carry signal and said input digits received by the respective stage;

combinational gating means connected to each of said stages for transferring the respective output carry signal of each of said stages to the successive higher one of said stages at a predetermined time, said combinational gating means including a plurality of gating circuits each associated with a respective one of said stages, each of said gating circuits having a plurality of inputs, each one of said inputs being exclusively connected to one of said ouputs of said respective one stage; a single output connected to said input for an input carry signal of the successive one of said stages of next higher significance level for transmitting an input carry signal thereto; and carry signal input means for receiving said input carry signal from said gating circuit corresponding to the successive one of said stages of next lower significance level;

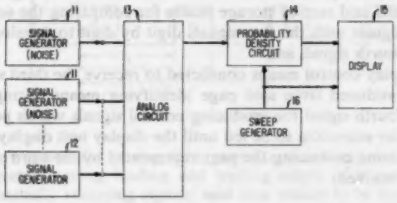
an enabling line connected from said cycle control element to each of said gating circuits;

said cycle control element being operative for generating an enabling signal on said enabling line in a subsequent second time interval for activating said single output of each of said gating circuits for transmitting a carry signal therethrough under exclusive control of said input carry signal from said gating circuit corresponding to the successive one of said stages of next lower significance level.

4,139,895
ANALOG COMPUTER

Charles R. Kurkjian, Bernards Township, Somerset County, and George E. Peterson, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 19, 1977, Ser. No. 826,041
Int. Cl.[2] G06G 7/48
U.S. Cl. 364—802 4 Claims

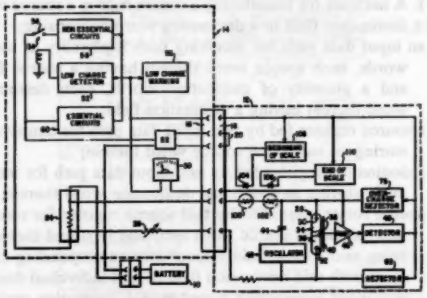


1. An analog computer comprising at least one signal generator, including at least one noise generator, each for producing an electrical signal representing a physical variable of a set of physical variables of a subject physical system; a physical phenomenon analog circuit for accepting the signals and producing an intermediate signal, the analog circuit being electrically connected to the at least one signal generator, the analog circuit representing the interaction between the physical variables and the subject physical system; and a probability density circuit for accepting the intermediate signal and producing an output signal representing the response of the subject physical system to the set of physical variables, at least one of which is random, the probability density circuit being electrically connected to the analog circuit.

4,139,896
METHOD AND APPARATUS FOR PRODUCING NONLINEAR INTEGRAL FUNCTIONS

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Division of Ser. No. 538,465, Jan. 3, 1975, abandoned. This application Jul. 1, 1976, Ser. No. 701,887
Int. Cl.[2] G06G 7/18; G01R 11/44
U.S. Cl. 364—829 16 Claims



1. Apparatus for nonlinearly integrating an electrical signal comprising:

means for integrating over an interval of time an input signal applied to said integrating means;

means coupled to said integrating means for providing during said interval an output signal that is a function of the integral of said input signal, said output signal varying over a first range;

at least one means responsive to said output signal to produce a control signal when said output signal is in a predetermined range within said first range; and

at least one means responsive to said control signal for modifying said electrical signal before it is applied to said integrating means as said input signal, said modifying means being operative during said interval of integration to change the signal that is integrated when said output signal is in said predetermined range, wherein the response of the integrating means to said electrical signal is varied between that when the output signal is within said predetermined range and that when the output signal is not within said predetermined range.

15. A method for nonlinearly integrating an electrical signal comprising the steps of:

integrating over an interval of time an input signal applied to an integrating means;

providing during said interval an output signal that is a function of the integral of said input signal, said output signal varying over a first range;

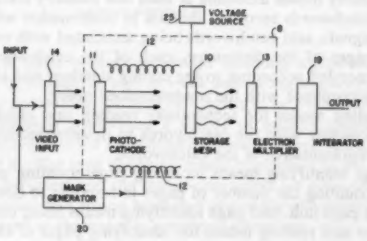
modifying said electrical signal in response to said output signal, before said electrical signal is applied to said integrating means as said input signal, to change the signal that is integrated when said output signal is in a predetermined range within said first range, wherein the response of the integrating means to said electrical signal is varied between that when the output signal is within said predetermined range and that when the output signal is not within said predetermined range; and

applying said output signal to a display means bearing a nonlinear scale matched to the varied responses of said integrating means to said electrical signal.

4,139,897
FAST TWO DIMENSIONAL FOURIER TRANSFORM DEVICE

Keith L. Gardner, and Henry N. Adaniya, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1977, Ser. No. 778,910
Int. Cl.[2] G06G 7/19
U.S. Cl. 364—827 9 Claims



1. A device for deriving an electrical signal representative of a two dimensional Fourier transform of a two dimensional input image comprising:

means for generating video two dimensional input images;

a correlation device placed to receive said video two dimensional input images such that said video images are converted to electrical signals representing said input images;

a storage screen within said correlation device placed in the path of said converted electrical signals for storing a predetermined electrical signal;

a voltage source electrically connected to said storage screen for controlling when said electrical signals are stored, erased or passed through said storage screen such that a predetermined input image's electrical signal is stored on said storage screen while electrical signals representing other input images are passed through said storage screen for correlation with said stored image;

means for generating a series of signals representative of

mask images of terms in a Fourier series into said correlation device where they are correlated with said stored input image and then emitted as correlated output; and

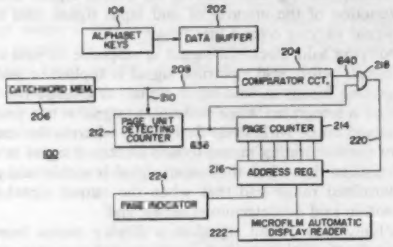
means for integrating said correlated outputted mask signals so as to determine the Fourier transform of said stored input image.

4,139,898

MICROFILM SEARCHING READER

Atsuyuki Tanaka, Sakai, Japan, assignor to General Company Limited and Minolta Camera Co., Ltd., both of Osaka, Japan

Filed Apr. 29, 1977, Ser. No. 792,095
Claims priority, application Japan, May 14, 1976, 51-54291
Int. Cl. G06f *13/06*
U.S. Cl. 364—900 **6 Claims**



1. A microfilm searching reader for searching a microfilm having pages of a dictionary recorded in frames in a predetermined order for a frame containing a word associated with an input character to display the frame on a display unit comprising:

input signal generating means provided with character keys entering input characters into the reader for generating first signals encoded according to a coding standard in response to the character keys, the coding standard providing each of the characters with a unique significance which increases along the predetermined order;

memory means including at least one memory track having catchwords recorded thereon in combination with clock signals, said catchwords being associated with respective pages of the dictionary, each of the catchwords being encoded according to the coding standard and aligned in accordance with the predetermined order;

reading means for sequentially reading said clock signals together with the catchwords to develop second signals representative of the catchwords;

page identifying means including page counting means for counting the number of pages in response to detection of a page unit, said page identifying means being connecting to said reading means for identifying pages of the dictionary associated with the catchwords from the second signals to produce third signals representative of the number of pages of the dictionary, said page identifying means comprising page unit detecting means connected to said reading means for counting the clock signals to detect a page unit of the dictionary;

said page unit detecting means comprising means connected to said reading means for detecting a digit position of the second signals, and means for counting the number of digit positions of the second signals in response to said digit position detecting means;

comparing means connected to said input signal generating means and said reading means for comparing the second signals with the first signals for determining when the second signals are equal to or exceed the first signal with respect to the significance to develop a fourth signal;

said comparing means comprising first storage means connected to said input signal generating means for storing the first signals sequentially in predetermined digit positions, second storage means connected to said reading means for storing the second signals therein, said second storage means having a storage capacity of at least one digit of the second signals and temporarily storing one digit in succession of the second signals, means connected to said first storage means and said digit position number counting means for extracting digit by digit the first signals from said first storage means in response to the number counted in said digit position number counting means, and comparator means connected to said extracting means and said second storage means for comparing the second signals with the first signals digit by digit to develop the fourth signal; and

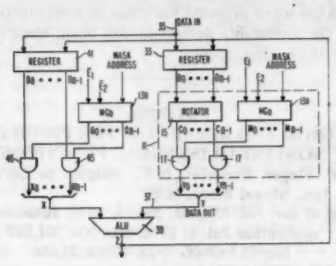
display control means connected to receive the third signal produced from said page identifying means during the fourth signal for producing control signals which permit the microfilm to be fed until the display unit displays the frame containing the page represented by the third signal received.

4,139,899

SHIFT NETWORK HAVING A MASK GENERATOR AND A ROTATOR

Bhalchandra R. Tulpule, Storrs, Conn., and Daniel D. Gajski, Philadelphia, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 18, 1976, Ser. No. 733,055
Int. Cl.[2] G06F *7/00*; G11C *19/00*
U.S. Cl. 364—900 **3 Claims**



1. A network for transferring a source field in a source word to a destination field in a destination word comprising:

an input data path for receiving both a plurality of source words, each source word therein having a source field, and a plurality of destination words, each destination word therein having a destination field;

a source register fed by said input data path for temporarily storing an individual source word therein;

a destination register fed by said input data path for temporarily storing an individual destination word therein;

source rotate means fed by said source register for rotating said individual source word temporarily stored therein to bring said source field thereof into corresponding alignment with said destination field of said individual destination word temporarily stored in said destination register;

source mask means fed by said source rotate means for masking all but said source field of said individual source word rotated by said source rotate means;

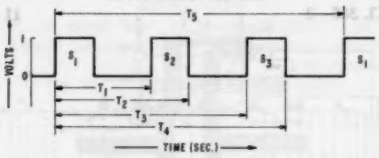
destination mask means fed by said destination register for masking said destination field of said individual destination word temporarily stored therein; and

logic means fed by both said source mask means and said destination mask means for combining said rotated and masked individual source word with said masked individual destination word.

4,139,900
GROUND STATION DATA STORAGE SYSTEM

Louis R. West, Willingboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,412
Int. Cl.[2] G04F 10/00
U.S. Cl. 364—900 5 Claims



1. A system for storing data counts representative of a time difference among leading and trailing edges of a group of sequentially recurring signals, said data counts to be accessed by a utilization device, comprising in combination;

(a) clock means for generating time signals;

(b) address generation means responsive to the occurrence of edges of said signals for generating addresses of storage locations for storing binary count values representative of the time spacings of particular edges from a reference edge;

(c) counter means responsive to said clock means for supplying binary count values representative of time spacings of particular edges from a reference edge;

(d) storage means having storage locations coupled to store said binary count values at the addresses generated by said address generation means for respective edges,

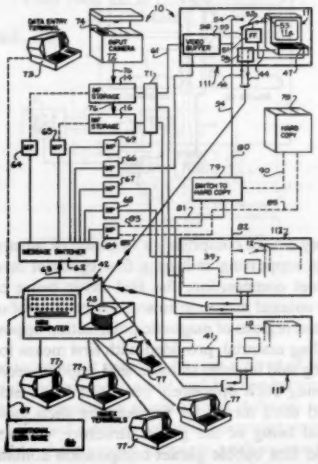
(e) means for subsequently supplying addressed binary count values stored in said storage means to said utilization device; and

(f) means for initiating the counter means to count to said binary count values from the leading reference edge of the initial signal in said group.

4,139,901
DOCUMENT STORAGE AND RETRIEVAL SYSTEM

Kingston E. Ganske, Auburn, and Mervin L. Falk, Sunnyvale, both of Calif., assignors to Teknekron, Inc., Berkeley, Calif.

Filed May 4, 1977, Ser. No. 793,531
Int. Cl.[2] G06F 3/14
U.S. Cl. 364—900 7 Claims

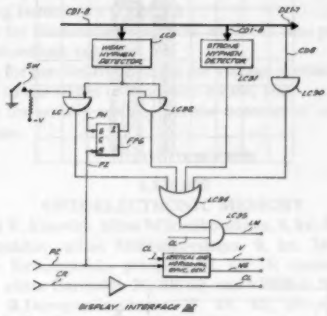


1. A document storage and retrieval system comprising a plurality of addressable storage assemblies including storage elements containing prerecorded information representative of images of documents and a plurality of means for retrieving said storage elements, each of said retrieving means being respectively associated with a related one of said storage assemblies, means for converting the document images into video signals representative thereof, a plurality of control terminals each including a buffer storage unit for recording said video signals representative of said images, said control terminals having video displays associated therewith coupled to receive video output signals from its video buffer storage unit for displaying images thereon, computer means including data storage means containing identifying information associated with each prerecorded document image, and means selectively operable from said terminals for coupling said terminals selectively in information transfer relation with respect to said computer means for either receiving document information from said computer or video information via the buffer storage unit of the terminal requesting the document information.

4,139,902
HYPHENATION CONTROLLER

Leslie J. Bodin, Stonybrook, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 12, 1977, Ser. No. 832,280
Int. Cl.[2] G06F 5/00; B41J 25/00
U.S. Cl. 364—900 7 Claims



1. In a word processing system handling alphabetic and numeric characters as well as weak and strong hyphens, apparatus for controlling the type of hyphen to be transferred to a record medium comprising a source of serially transmitted characters, means for sequentially storing the received characters, and hyphen type changing means responsive to the transmitted characters and the stored characters for changing any weak hyphen to a strong hyphen if one of the characters adjacent thereto in the series is a numeric character.

4,139,903
LOGIC STATE ANALYZER

Justin S. Morrill, Jr., Cascade; William A. Farnbach, and Charles T. Small, both of Colorado Springs, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 672,226, Mar. 31, 1976, Pat. No. 4,040,025.
This application May 31, 1977, Ser. No. 801,891
Int. Cl.[2] G06F 3/14; G01R 13/20; G06F 3/02, 11/00
U.S. Cl. 364—900 7 Claims

1. An apparatus for use in the analysis of a digital device, by displaying visual representations of monitored device signals in response to the occurrence of preselected conditions, said apparatus comprising:

threshold circuitry for providing a threshold signal;

input means coupled to said threshold circuitry for monitoring a plurality of device signals within said digital device and for providing a plurality of buffered device signals in response to said device signals and said threshold signal;

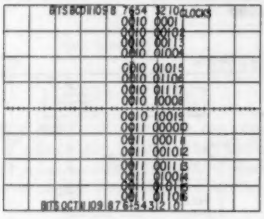
timing generator means coupled to the input means for providing at least one timing signal in response to at least one of said buffered device signals;

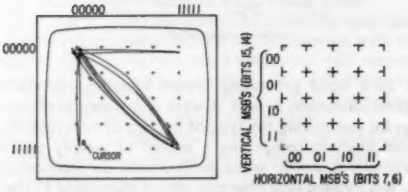
first storage means coupled to said input means and said timing generator means for storing electrical representations of said buffered device signals in response to at least one of said timing signals;

trigger word means having a plurality of switchable elements for producing a plurality of trigger word signals in response to the setting of said switchable elements;

pattern recognition means coupled to the first storage means, the trigger word means and the timing generator means for producing a first plurality of control signals in response to the electrical representations of said buffered device signals, said plurality of trigger word signals and one or more of said timing signals;

trigger generator means having settable delay means and coupled to the pattern recognition means for providing a trigger signal in response to the setting of the settable delay means and said first plurality of control signals;





memory control means coupled to the timing means and said trigger generator means for providing a memory input control signal in response to said timing signals and said trigger signal;

first memory means coupled to the first storage means and to the trigger generator means for storing electrical representations of said buffered device signals in response to said memory input control signal and for providing a memory output signal in response to said stored electrical representations of said buffered device signals and an output control signal; and

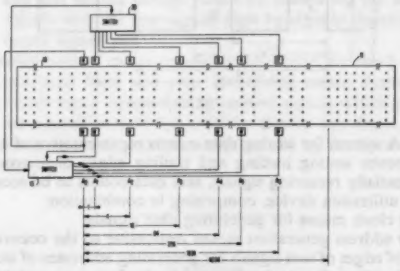
display means coupled to said first memory means and having control means for providing said output control signal and having means for providing an X position signal and a Y position signal in response to first and second predetermined portions, respectively, of said memory output signal, said display means causing visual indications to be displayed in positions within an X-Y coordinate display format in response to said X position signal and said Y position signal.

4,139,904

BUBBLE LATTICE FILES WITH SELECTED ACCESS CHANNEL POSITIONING

Ashok K. Chandra, Yorktown Heights, and Chak-K. Wong, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,752
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—3 **11 Claims**



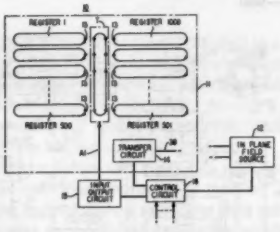
1. A plural access channel bubble lattice file including at least three access channels and plural rows and columns of bubbles, each said access channel providing access to bubble columns aligned therewith for reading and/or writing, at least some of said access channels located, relative to a reference location to establish a substantially constant ratio between distances from said reference location and adjacent channels.

4,139,905

MAGNETIC DEVICES UTILIZING GARNET EPITAXIAL MATERIALS

Stuart L. Blank, Madison; Roy C. LeCraw, Summit, and Raymond Wolfe, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 14, 1976, Ser. No. 695,779
Int. Cl.[2] G11C *11/14*; G11B *5/00*
U.S. Cl. 365—33 **15 Claims**



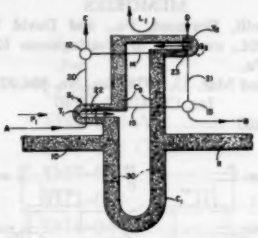
1. Memory device comprising a substrate of substrate garnet composition supporting at least a first epitaxial layer of first bubble garnet composition, the said layer being capable of evidencing uniaxial magnetic anisotropy capable of supporting local enclosed regions of magnetic polarization opposite to that of surrounding material, provided with first means for magnetically biasing said layer to stabilize said regions, second means for positioning such oppositely polarized local and enclosed regions, and third means for propagating such local regions, said material being of the garnet structure, characterized in that the said first bubble garnet composition contains at least 0.1 atom of lanthanum out of a total of 3 atoms in the crystallographic dodecahedral site and in that the said substrate has the crystallographic orientation [110] ± 5 degrees.

4,139,906

SWITCH FOR FAULT TOLERANT BUBBLE DOMAIN MEMORY SYSTEMS

Thomas T. Chen, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 1, 1977, Ser. No. 856,718
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—15 6 Claims



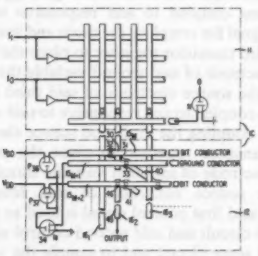
1. A magnetic bubble domain device system comprising,
first propagation path means for magnetic bubble domains,
second propagation path means coupled to a first location in said first propagation path means and disposed adjacent to a second location in said first propagation path means.
third propagation path means coupled to a third location in said first propagation path means and disposed adjacent to a fourth location in said first propagation path means, and
conductor means including a closed loop,
a first portion of said closed loop associated with said second propagation path means and said second location in said first propagation path means,
a second portion of said closed loop associated with said third propagation path means and said fourth location in said first propagation path means,
a third portion of said closed loop spaced apart from all of said propagation path means.

4,139,907

INTEGRATED READ ONLY MEMORY

Donald E. Blahut, Holmdel, and James A. Cooper, Jr., Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1977, Ser. No. 829,570
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—104 6 Claims



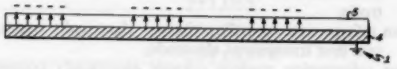
1. A semiconductor memory having a layer of semiconductor material and adjacent word and bit conductors separated by electrically insulating material and defining intersections therebetween, said memory including a predetermined pattern of switchable short circuit elements each connecting one of said bit conductors to a reference potential at one of said intersections, said memory being characterized by a pattern of word conductors which terminate at ones of said intersections at which said elements occur for exposing remaining bit conductors therebeyond for making lead connections thereto.

4,139,908

PHOTOVOLTAIC-FERROELECTRIC DATA RECORDER

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 533,365, Dec. 16, 1974, Pat. No. 4,051,465, which is a continuation-in-part of Ser. No. 411,853, Nov. 1, 1973, Pat. No. 3,855,004. This application Aug. 15, 1977, Ser. No. 824,894
Int. Cl.[2] G11C *11/42*
U.S. Cl. 365—117 14 Claims



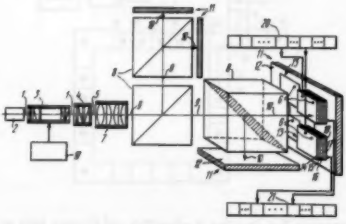
9. An information storage and read-out apparatus comprising,
a plurality of cells of ferroelectric ceramic material, each cell being remanently polarized,
means for illuminating said cells, each cell thus producing a photovoltaic voltage,
means for parallel-transferring the voltage produced by each cell to the stages of a register means, and
means for serially reading out the contents of said register means.

4,139,909

OPTOELECTRONIC MEMORY

Vsevolod V. Kitovich, ulitsa Mikhalkovskaya, 9, kv. 43; Valentin G. Strakhov, ulitsa Mikhalkovskaya, 9, kv. 26; Jury M. Popov, Sevastopolsky prospekt, 81, kv. 75; Anatoly F. Plotnikov, ulitsa Garibaldi, 21, kv. 68, and Vladimir N. Seleznev, ulitsa B.Dorogomilovskaya, 25, kv. 65, all of Moscow, U.S.S.R.

Filed May 26, 1977, Ser. No. 800,908
Int. Cl.[2] G11C *13/04*
U.S. Cl. 365—125 2 Claims



1. An optoelectronic memory comprising:
a source of electromagnetic radiation, producing an original beam;
a means for scanning said original beam, placed along said original beam after said source of electromagnetic radiation and having an input;
an address register having an output electrically connected to said input of said means for scanning of said original beam;
a means for splitting said original beam into m beams forming a scan pattern, placed along said original beam after said means for scanning said original beam;

a focusing lens placed along said original beam after said means for splitting said original beam;

n beam splitters placed after said focusing lens along each said m beams and splitting each said beam into two beams;

said beam splitters placed along each direction of said beams so that in the direction of each said beam their number is uniform;

|n+1| information memory plates, each being placed at a focal distance from said focusing lens after the last of said beam splitters along said beam and having one of its surfaces facing said beam;

m memory modules, each being made as a multilayer structure and being arranged on said surfaces of said information memory plates;

said multilayer structure comprising, arranged along said beam, a first transparent electrode, next layers selected in a specified combination from a group containing at least two dielectrics and a semiconductor, and a second electrode;

an information recording register electrically connected to said first transparent electrode;

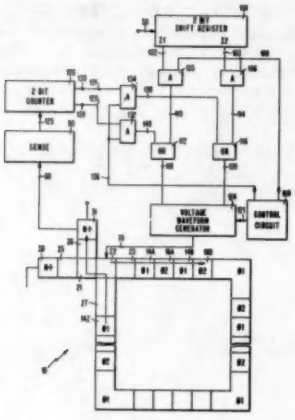
an information readout register electrically connected to said second electrode.

4,139,910

CHARGE COUPLED DEVICE MEMORY WITH METHOD OF DOUBLED STORAGE CAPACITY AND INDEPENDENT OF PROCESS PARAMETERS AND TEMPERATURE

Narasipur G. Anantha, Hopewell Junction; Fung Y. Chang, and Barry J. Rubin, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,658
Int. Cl.[2] G11C *7/04, 11/34, 19/28*
U.S. Cl. 365—183 **9 Claims**



9. Apparatus for storing a plurality of binary bits at a preselected storage site including a plurality of serially connected storage sites each adapted to retain one of a plurality of at least three distinct charge increment levels,

means for establishing a selected one of said plurality of charge increment levels in a desired one of said storage sites, and

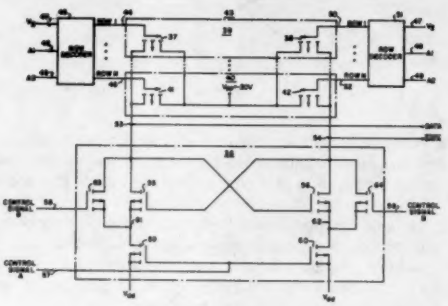
means for detecting which of the charge increment levels was established in said storage site.

4,139,911

HIGH SPEED SENSE CIRCUIT FOR SEMICONDUCTOR MEMORIES

Felice M. Sciulli, Dormont, Pa., and David W. Williams, Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 13, 1978, Ser. No. 886,027
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—207 **2 Claims**



1. A memory sense circuit for comparing the threshold voltages of a first and second variable threshold transistor wherein the drain electrodes of said first and second variable threshold transistors are coupled to a first voltage supply and the gate electrodes are coupled to a second voltage supply comprising:

third and fourth field effect transistors each having a gate, source and drain electrode,

the gate electrode of said third transistor coupled to the drain electrode of said fourth transistor and the source electrode of said first variable threshold transistor,

the gate electrode of said fourth transistor coupled to the drain electrode of said third transistor and the source electrode of said second variable threshold transistor,

first and second control signals,

first means coupled to and responsive to said first control signal for coupling the source electrode of said third and fourth transistors to a second voltage supply,

second means coupled to and responsive to said second control signal for coupling the drain and source electrodes of said third transistor together to place the voltage of the source electrode of said second variable threshold transistor onto the source electrode of said third transistor, and

third means coupled to and responsive to said second control signal for coupling the drain and source electrodes of said fourth transistor together to place the voltage on the source electrode of said first variable threshold transistor onto the source electrode of said fourth transistor, whereby said first control signal is used to reset and latch said sense circuit and said second control signal is used to reset said sense circuit and to sample the voltages on the source electrode of the variable threshold transistors.

DESIGN PATENTS

GRANTED FEB. 13, 1979

ERRATA

For CLASS	See PATENT NO.
D87–003 A	251,082
D87–005 G	251,083
D87–009	251,084
D13–099	251,085
D14–044	251,086
D15–007	251,087
D15–023	251,088
D15–027	251,089
D15–028	251,090
D16–042	251,091
D16–042	251,092
D19–026	251,093
D19–062	251,094
D19–067	251,095

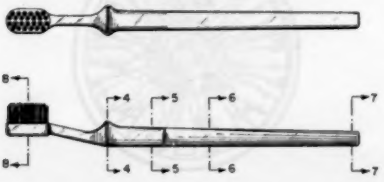
DESIGNS

FEBRUARY 13, 1979

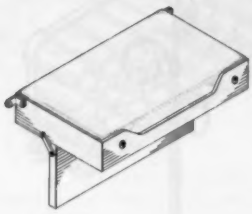
251,036
SPORTS SHOE
Joseph Torrance, 51 Rylees Pl., Penilee, Glasgow, Scotland
Filed May 2, 1977, Ser. No. 793,195
Claims priority, application United Kingdom, Nov. 10, 1976, 977906/76
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—311

251,037
GOLF TOOL AND MARKER HOLDER
Murphy D. Cudahy, III, South Bend, Ind., assignor to Murphy Products Inc., South Bend, Ind.
Filed Jan. 14, 1977, Ser. No. 759,397
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400

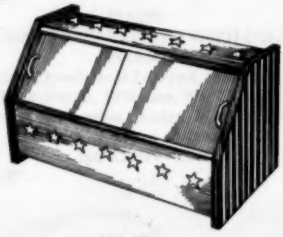
251,038
TOOTHBRUSH
Percy H. Hill, and John G. Kreifeldt, both of Winchester, Mass., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Feb. 7, 1977, Ser. No. 765,438
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



251,039
COMBINATION WORK BENCH AND BED
George S. Reppas, 1030 San Raymundo Rd., Hillsborough, Calif. 94010
Filed Dec. 22, 1976, Ser. No. 753,546
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4



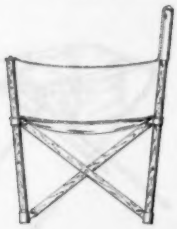
251,040
TOY BOX
Michael E. Pawlak, General Delivery, Echo, La. 71330
Filed May 4, 1976, Ser. No. 683,200
The portion of the term of this patent subsequent to Jul. 13, 1983, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—5



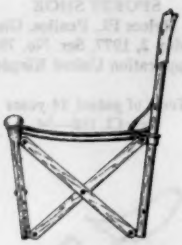
251,041
COLLAPSIBLE BABY CHAIR
F. R. Van Noord, Valkenboskdade 655, The Hague, Netherlands
Filed Dec. 21, 1976, Ser. No. 752,847
Claims priority, application Benelux, Jun. 22, 1976, 7651124
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—6

251,042
STAND FOR POTTED PLANTS
Milton E. Handler, Northbrook, and Richard Sylvan, Glenview, both of Ill., assignors to Hirsh Company
Filed Oct. 20, 1977, Ser. No. 844,115
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—28

251,043
CHAIR
Herman Persson, Varvsgatan 26, S-209 20 Ahus, Sweden
Filed Mar. 9, 1977, Ser. No. 776,073
Claims priority, application Sweden, Feb. 2, 1977, 77236
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

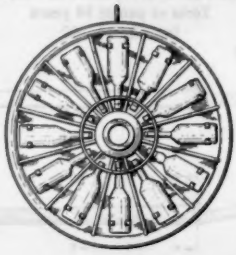


251,044
CHAIR
Herman Persson, Varvsgatan 26, S-290 20 Ahus, Sweden
Filed Mar. 9, 1977, Ser. No. 776,074
Claims priority, application Sweden, Mar. 2, 1977, 77235
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

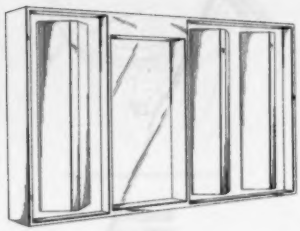


251,045
WALL MOUNTED BRACKET FOR A HANDHELD SHOWERHEAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Ill.
Filed Mar. 9, 1977, Ser. No. 776,005
Term of patent 14 years
Int. Cl. D23—*02*; D8—*08*
U.S. Cl. D6—86

251,046
DISPLAY RACK AND BOTTLES THEREFOR
Richard C. Landwehr, 14890 W. 53rd Ave., Golden, Colo. 80401
Filed Dec. 6, 1976, Ser. No. 747,562
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—113



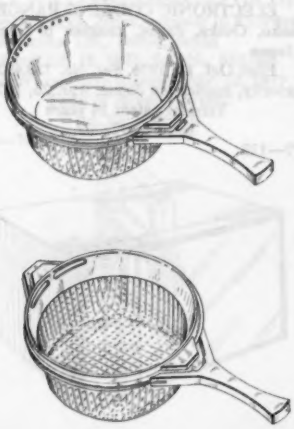
251,047
COMBINED MIRROR AND DISPLAY UNIT FOR EYEGLASS FRAMES
Stephen U. Winig, Narberth, Pa., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 4, 1978, Ser. No. 893,841
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—157



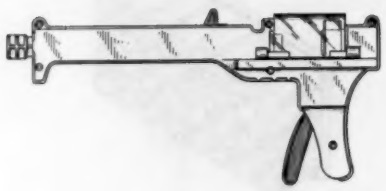
251,048
COMBINED DISPLAY RACK AND ADVERTISING HOLDER
Fred Richman, and Jerry Hammer, both of New York, N.Y., assignors to Revlon Inc., New York, N.Y.
Filed Oct. 8, 1976, Ser. No. 731,032
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—160

251,049
BOTTLE RACK
Julius C. Gardner, 936 27th St., Orlando, Fla. 32804
Filed Feb. 28, 1977, Ser. No. 772,721
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

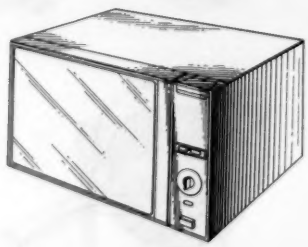
251,050
COMBINED SIEVE AND HOLDER WITH COOKING PAN INSERT
Hans I. Wallsten, Chemin de la Lisiere 6, Lausanne, Switzerland
Filed Nov. 8, 1976, Ser. No. 739,699
Claims priority, application Sweden, May 11, 1976, 76-1027
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—47



251,051
NUTCRACKER
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Nov. 26, 1976, Ser. No. 745,444
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98

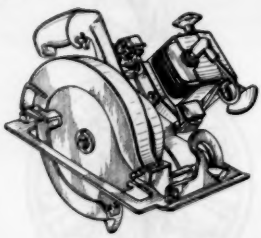


251,052
ELECTRONIC COOKING RANGE
Mikio Kosako, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Japan
Filed Oct. 18, 1976, Ser. No. 733,463
Claims priority, application Japan, Apr. 23, 1976, 51-15337
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



251,053
HARVESTING TOOL
William A. Loveland, 503 Manatee Ave., Bradenton, Fla. 33508
Filed Mar. 14, 1977, Ser. No. 777,021
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—1

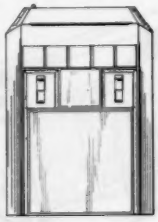
251,054
SAW
Buford J. Schramm, 1330 E. Fremont Dr., Tempe, and Robert G. Everts, 2301 W. Colt, Chandler, both of Ariz. 85281
Filed Oct. 13, 1976, Ser. No. 732,516
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—66



251,055
WRIST WATCH
Eugene J. Sulek, Plano, Tex., assignor to Texas Instruments Incorporated
Filed Sep. 23, 1976, Ser. No. 725,762
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

251,056
WATCH
Alain D. Perrin, Rueil-Malmaison, France, assignor to Les Must de Cartier, France
Filed Oct. 27, 1976, Ser. No. 736,206
Claims priority, application France, Apr. 27, 1976, 74750
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

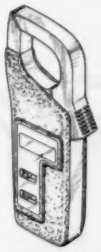
251,057
ELECTRONIC TIMER CASE
Marvin B. Rudin, 555 Middlefield Rd., Mt. View, Calif. 94040; Nicholas F. Talesfore, 1732 Srobisher Wy, San Jose, Calif. 95125, and Edward Collins, IV, 15360 Karl Ave., Monte Sereno, Calif. 95030
Filed Nov. 1, 1976, Ser. No. 737,882
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



251,058
TIMER
Ellworth R. Danz, La Salle, and John C. Crenshaw, Joliet, both of Ill., assignors to General Time Corporation, Thomaston, Conn.
Filed Apr. 1, 1977, Ser. No. 783,690
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40

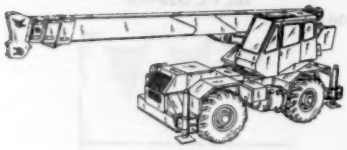
251,059
TEMPLATE FOR YARN
Joseph J. Montell, Laguna Beach, Calif., assignor to Rug Crafters, Santa Ana, Calif.
Filed May 19, 1977, Ser. No. 798,677
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D10—64

251,060
PORTABLE VOLT-OHM-AMMETER OR THE LIKE
Takeo Kuramoto, Tokyo, Japan, assignor to Kyoritsu Electrical Instruments Works, Ltd., Tokyo, Japan
Filed Jul. 18, 1977, Ser. No. 816,400
Claims priority, application Japan, Apr. 22, 1977, 52-14888
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79

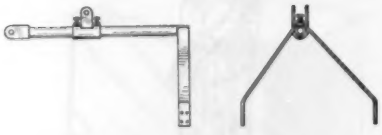


251,061
PENDANT OR THE LIKE
Anita M. Spinelli, 9150 E. Sellarole, Tucson, Ariz. 85710
Filed Mar. 17, 1977, Ser. No. 778,445
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—49

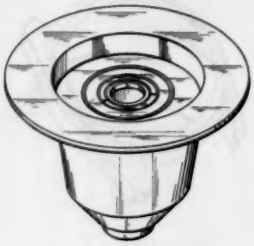
251,062
MOBILE CRANE
Raymond J. Wacht; Ram N. Rathi, and David B. Gamble, all of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation
Filed Jan. 12, 1978, Ser. No. 868,879
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



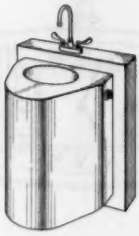
251,063
LIFT ATTACHMENT FOR SILO UNLOADER
Glen D. Hansen, Maple Plain, Minn., assignor to Veda, Inc., Long Lake, Minn.
Filed Feb. 3, 1977, Ser. No. 765,222
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



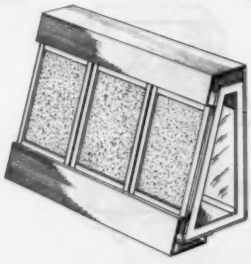
251,064
SPRINKLER HEAD PROTECTOR OR SIMILAR ARTICLE
Harry G. Bergland, 3812 Floral Dr., North Highlands, Calif. 95660
Filed Mar. 25, 1976, Ser. No. 670,241
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7



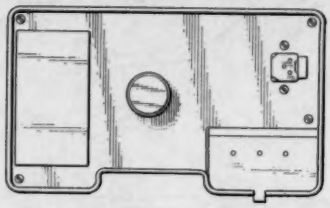
251,065
COMBINED WASH BASIN AND TOILET
J. Les Campbell, Burlingame, Calif., assignor to Aluminum Plumbing Fixture Corp.
Filed Aug. 23, 1977, Ser. No. 827,118
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

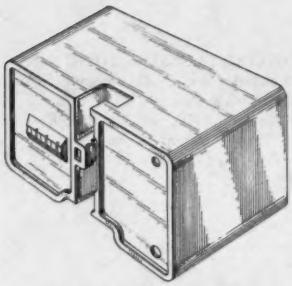


251,066
CONTINUOUS SKYLIGHT FOR BUILDING
Henry F. Hope, and Stephen F. Hope, both of 2548 Wyandotte Rd., Willow Grove, Pa. 19090
Filed Mar. 12, 1975, Ser. No. 557,827
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D23—153

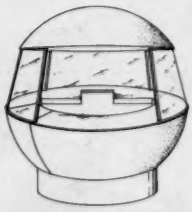


251,067
CONTROLLER FOR AN INTRAVENOUS FLUID DELIVERY APPARATUS
Nick Zissimopoulos, Schaumburg, Ill., assignor to Baxter Travenol Laboratories, Inc.
Filed Feb. 17, 1978, Ser. No. 878,928
Term of patent 14 years
Int. Cl. 24—*02*
U.S. Cl. D24—8



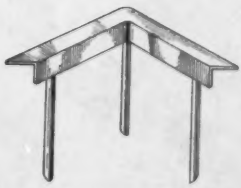


251,068
KIOSK
Densley Mills, 12 W. Moreland Pl., London, SW1, England
Filed Jan. 4, 1977, Ser. No. 756,612
Claims priority, application United Kingdom, Jul. 12, 1976, 976427/76
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—19

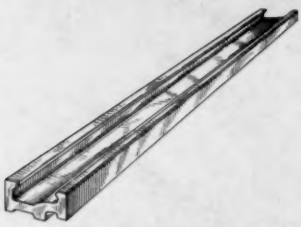


251,069
CANOPY FOR AIRCRAFT BRIDGE OR SIMILAR ARTICLE
Nils-Eric Anderberg, Lund, Sweden, assignor to Fabriksmontering I Trelleborg AB
Filed Nov. 3, 1976, Ser. No. 738,361
Claims priority, application Sweden, May 11, 1976, 761023
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59

251,070
LAWN EDGING DEVICE
James Blake, 532 N. Hanover St., Anaheim, Calif. 92801
Filed Feb. 26, 1976, Ser. No. 661,763
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



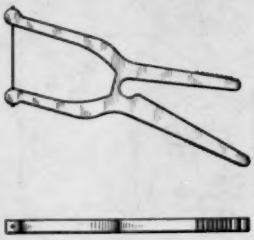
251,071
ROADWAY EXPANSION JOINT SEALING RETAINER EXTRUSION
John F. Brady, Wood Dale, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.
Filed Jan. 7, 1977, Ser. No. 757,477
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



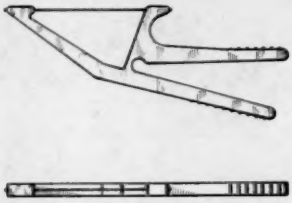
251,072
LIGHTER
Franz A. Stuetzer, Muhlheim, Main, Fed. Rep. of Germany, assignor to Rowenta-Werke, GmbH, Offenbach, Main, Fed. Rep. of Germany
Filed Aug. 25, 1976, Ser. No. 717,778
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1976, 9933
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36

251,073
COMBINED COMB AND NAIL FILE
Larry R. Whiteman, 2516 Fallcreek, Arlington, Tex. 76014
Filed Sep. 6, 1977, Ser. No. 830,490
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—25

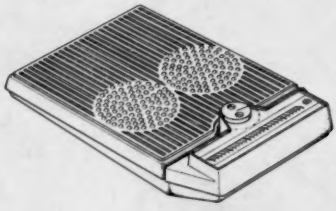
251,074
DENTAL FLOSSING TOOL
Norman Schiff, Kendall Park, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Aug. 15, 1977, Ser. No. 824,878
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D28—64



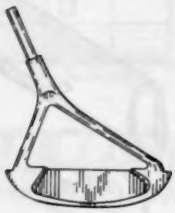
251,075
DENTAL FLOSSING TOOL
Norman Schiff, Kendall Park, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Aug. 15, 1977, Ser. No. 824,880
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D28—64



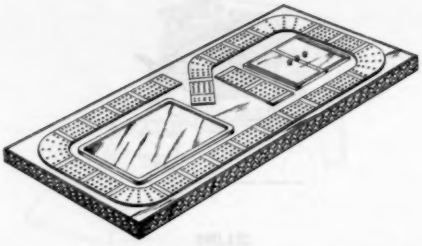
251,076
TRAINING MACHINE FOR INDOOR RUNNING
Azuma Ide, 33-5-213, 2-chome, Takashima-Daira, Itabashi-ku, Tokyo, Japan
Filed Dec. 14, 1976, Ser. No. 750,385
Claims priority, application Japan, Jul. 22, 1976, 51-28162
Term of patent 14 years
Int. Cl. D21—*02;* 272—*70*
U.S. Cl. D34—5 K



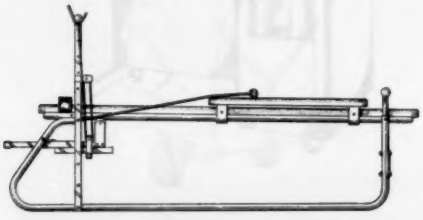
251,077
GOLF CLUB HEAD
William H. Strop, First Federal Bldg., Seventh and Felix Sts., St. Joseph, Mo. 64501
Filed Feb. 14, 1977, Ser. No. 768,437
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



251,078
CRIBBAGE GAME BOARD
Olof A. Eriksen, 13 Arden Rd., Denville, N.J. 07834
Filed Apr. 19, 1977, Ser. No. 788,909
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT

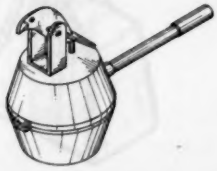


251,079
PHYSICAL EXERCISER
Earl M. Shugarman, 2652 San Joaquin Hills Rd., Corona del Mar, Calif. 92626
Filed Apr. 25, 1977, Ser. No. 790,201
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

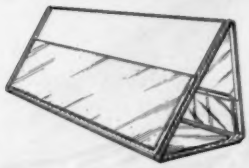


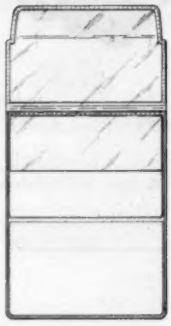
251,080
TOY SHOE
Jeffrey M. Koblick, Hopkins, Minn., assignor to K-tel International, Inc., Minn.
Filed Jun. 3, 1977, Ser. No. 803,035
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 D

251,081
BREATH-OPERATED NOVELTY TOY
Don Christian, 28001 Mountain Hwy., Spanaway, Wash. 98387
Filed Jul. 21, 1977, Ser. No. 817,834
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



251,082
FOLDABLE DISPLAY CASE FOR WATCHBAND CALENDAR CARDS OR THE LIKE
Patrick Petrie, 12210 Malone, Los Angeles, Calif. 90066
Filed May 31, 1977, Ser. No. 801,562
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 A

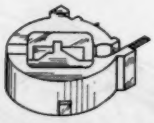




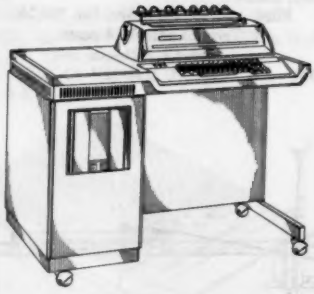
251,083
TOTE BAG
Harold Rabinowitz, Lakewood, and Thomas L. Geller, Colts Neck, both of N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Oct. 19, 1977, Ser. No. 843,461
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

251,084
SPECTACLE CASE
Robert Marks, 761 Montague Ave., San Leandro, Calif. 94577
Filed Jun. 6, 1977, Ser. No. 804,094
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—9

251,085
ULTRASONIC TRANSDUCER
David G. J. Fanshawe, Selsdon, England, assignor to U.S. Philips Corporation
Filed Dec. 12, 1977, Ser. No. 860,044
Claims priority, application United Kingdom, Jun. 13, 1977, 980410
Term of patent 14 years
Int. Cl. D13—*99*; D14—*99*
U.S. Cl. D13—99



251,086
PROCESSING SYSTEM
Robert M. Wilson, Hayward, and Loren D. Stirling, Pleasanton, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 17, 1977, Ser. No. 760,199
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—44

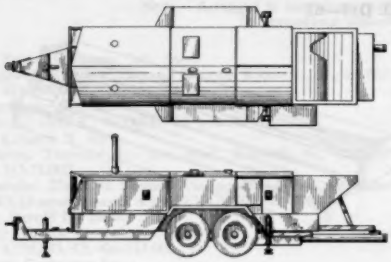


251,087

MULTIPLICITY PUMP VEHICLE

Howard I. Smith, 9989 East Ave., Hesperia, Calif. 92345

Filed Mar. 7, 1977, Ser. No. 775,568
Term of patent 14 years
Int. Cl. D15—*02, 04*
U.S. Cl. D15—7

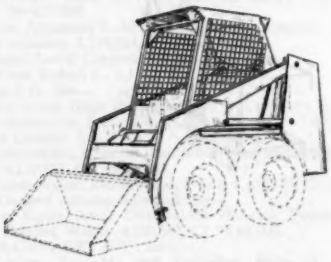


251,088

SKID STEER LOADER VEHICLE BODY

Logan W. Johnson, Minnetonka, Minn.; John W. Henline, Lisbon, N. Dak.; Joseph M. Mather, Lisbon, N. Dak., and James J. Bauer, Lisbon, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 17, 1977, Ser. No. 780,161
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—23

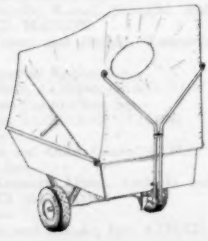


251,089

GRASS AND LEAF COLLECTOR FOR A LAWN MOWER

Harold P. Jackson, McDonough, Ga., assignor to McDonough Power Equipment, Inc., McDonough, Ga.

Filed May 23, 1977, Ser. No. 799,755
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27

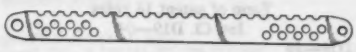


251,090

TOOL CONTROL BAR CONNECTING A TRACTOR AND A TOWED IMPLEMENT

Ancel H. Fleming, 3715 N. Tulsa, Oklahoma City, Okla. 73112

Filed Aug. 18, 1976, Ser. No. 715,504
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28

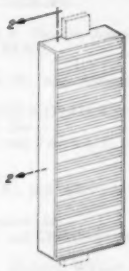


251,091

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.N.Y.

Filed May 25, 1977, Ser. No. 800,460
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

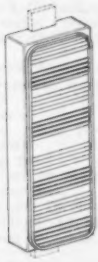


251,092

PHOTOFLASH LAMP UNIT

Russell W. Chipner, South Euclid; Donald R. Schindler, Burton, and Peter L. Shelko, Chagrin Falls, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,465
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

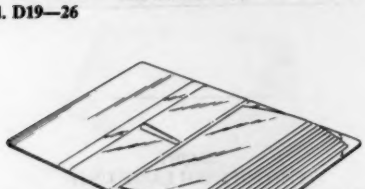


251,093

STATIONERY FOLDER

Keith R. Testro, 22 Kellett Grove, North Kew, Victoria 3102, and Rex C. Testro, 56 Campbell St., East Kew, Victoria 3102, both of Australia

Filed Nov. 12, 1976, Ser. No. 741,532
Claims priority, application Australia, Aug. 6, 1976, 69780
The portion of the term of this patent subsequent to Nov. 16, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26

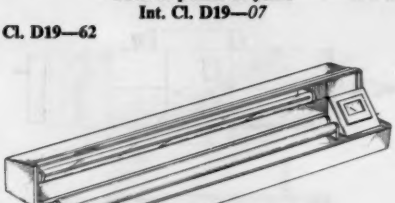


251,094

FLUORESCENT TUBE DEMONSTRATION KIT

Howard E. Krachman, Pasadena, and Larry G. Lindsey, San Dimas, both of Calif., assignors to Developmental Sciences, Inc., City of Industry, Calif.

Filed Apr. 7, 1977, Ser. No. 785,774
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

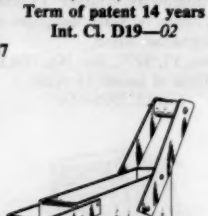


251,095

TAPE DISPENSER

Douglas Nielsen, P.O. Box 1029, Kanab, Utah 84741

Filed Jul. 11, 1977, Ser. No. 814,144
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—67



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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Boswell, Robert F., Jr.; and Duncan, Robert L., Jr., 4,139,620, Cl. 424-248.570.

AB Perma System: *See—*
Brolin, Hans R., 4,139,044, Cl. 160-321.000.

Abel, Kenneth N.: *See—*
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Stiles, Charles E., 4,138,767, Cl. 17-1.00F.

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Lapornik, Edward F., 4,139,305, Cl. 356-125.000.

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Odenwalder, Heinrich; Puschel, Walter; and Stolzenburg, Rudolf, 4,139,383, Cl. 96-29.00D.
Tabel, Walter; and Johanns, Heinz, 4,139,163, Cl. 242-56.00R.

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von Konig, Anita; Odenwalder, Heinrich; Peters, Manfred; and Puschel, Walter, 4,139,387, Cl. 96-64.000.

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Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,139,457, Cl. 210-20.000.

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Zijlstra, Jan G. H., 4,138,747, Cl. 4-286.000.

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Rumball, Kenneth F., 4,138,959, Cl. 113-1.00G.

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Nakao, Toshiyuki; Kawai, Shunichi; and Yamaguchi, Hiroji, 4,138,906, Cl. 74-674.000.
Yamazaki, Takeo; and Harada, Kuniyoshi, 4,138,765, Cl. 16-110.00R.

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Linder, Sten V., 4,138,888, Cl. 73-290.00R.

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Wang, Samuel S.; and Smith, Eugene L., Jr., 4,139,481, Cl. 252-61.000.

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Laliberte, Norman U., 4,139,694, Cl. 528-280.000.
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Zeeh, Bernd; Jung, Johann; and Ammermann, Eberhard, 4,139,641, Cl. 426-69.000.
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Kentosh, James M., 4,138,751, Cl. 9-8.00P.
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Kurahashi, Keizo; Shimizu, Michihiro; Andoh, Shizuo; and Yoshikawa, Kazuo, 4,139,803, Cl. 340-707.000.
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Ansul Company, The: *See—*
Rasheed, Khalid; and Warkentin, James D., 4,139,362, Cl. 71-90.000.
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Aoki, Yoshio: *See—*
Kawakami, Akira; Ogoshi, Toshiaki; Aoki, Yoshio; and Honda, Masao, 4,139,498, Cl. 252-555.000.
Aotani, Yoshimasa: *See—*
Ikeda, Tomoaki; Misu, Hiroshi; Aotani, Yoshimasa; and Shinozaki, Fumiaki, 4,139,391, Cl. 96-115.00R.
Aoyama, Kazuho: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,139,396, Cl. 106-243.000.
Appleby, Anthony J.; and Jacquelin, Jean, to Compagnie Generale d'Electricite. Rechargeable electrochemical system. 4,139,679, Cl. 429-21.000.
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White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., 4,139,719, Cl. 562-535.000.
Applied Engineering Co.: *See—*
Thompson, Garris A.; and Merritt, John H., Jr., 4,138,969, Cl. 122-421.000.
Applied Science Research Institute: *See—*
Watanabe, Nobuatsu; and Kita, Yasushi, 4,139,474, Cl. 252-1.000.
Arakawa, Tatsumi: *See—*
Ogata, Takashi; Arakawa, Tatsumi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,139,288, Cl. 354-7.000.
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Araki, Yoshihiko: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,139,396, Cl. 106-243.000.
Arco Polymers, Inc.: *See—*
Lantos, Peter R., 4,139,522, Cl. 260-45.75R.
Arita, Isao: *See—*
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,139,289, Cl. 354-23.00D.
Armstrong Cork Company: *See—*
Sitler, Rickie L., 4,139,662, Cl. 427-358.000.
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Maxey, Alexander R., 4,139,873, Cl. 360-85.000.
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Takahashi, Yasuo, 4,139,264, Cl. 350-216.000.
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Andersson, Conny, 4,139,048, Cl. 164-147.000.
Karlsson, Gosta, 4,139,722, Cl. 13-4.000.
Ashdown, Glynn R.; Smith, Gary R.; and Finder, Kenneth A., to Teradyne, Inc. Telephone line test system. 4,139,745, Cl. 179-175.30F.
Asher, David M.: *See—*
Tuckey, Charles H.; and Asher, David M., 4,139,580, Cl. 261-35.000.
Aslund, Christer: *See—*
Bergh, Sigvard; Gemmel, Goran; and Aslund, Christer, 4,139,377, Cl. 75-243.000.
Atari, Inc.: *See—*
Tuma, Wade B., 4,139,863, Cl. 358-82.000.
Atlantic Richfield Company: *See—*
Riehm, Roger A., 4,139,571, Cl. 260-668.00A.
AuClair, Christopher J.: *See—*
Williams, Meurig W.; and AuClair, Christopher J., 4,139,483, Cl. 252-62.10P.
Automobiles Peugeot: *See—*
Leichle, Claude, 4,139,809, Cl. 318-341.000.
Avedian, Aram. Machine vise. 4,139,188, Cl. 269-196.000.
Awerbuch, Leon: *See—*
Rogers, Alfred N.; and Awerbuch, Leon, 4,138,851, Cl. 60-641.000.
Ayata, Naoki: *See—*
Matsumoto, Seiichi; Tsunekawa, Tokuichi; Uchiyama, Takashi; Ayata, Naoki; Matsufuji, Yoji; and Ohkubo, Yukitoshi, 4,139,278, Cl. 350-332.000.
Ayme-Jouve, Michel: *See—*
Esnoult, Marc; and Ayme-Jouve, Michel, 4,139,394, Cl. 106-57.000.
B. F. Goodrich Company, The: *See—*
Lane, Parley C., Jr., 4,139,569, Cl. 260-666.00A.
Backenkohler, Willi. Mirror with rim in groove mounting. 4,139,269, Cl. 350-293.000.
Bacskai, Robert, to Chevron Research Company. Flexible glycolic acid terpolymers. 4,139,525, Cl. 528-302.000.
Baer, Martin A., to Illinois Tool Works Inc. Apparatus for producing drill screws. 4,138,754, Cl. 10-2.000.
Bahoshy, Bernard J.; and Klose, Robert E., to General Foods Corporation. Fixation of APM in chewing gum. 4,139,639, Cl. 426-3.000.
Bailey, John; Cassie, Leslie H.; Sherrington, Paul R.; and van Roo, Paul, to Procter & Gamble Company, The. Built detergent composition. 4,139,486, Cl. 252-135.000.
Bala, Harry: *See—*
Mowli, John C.; and Bala, Harry, 4,138,932, Cl. 93-35.0DS.
Baldwin, John J., to Merck & Co., Inc. 3-Cyano-2-pyridinyloxymethyloxazolidine derivatives. 4,139,535, Cl. 546-275.000.
Ballou, Harold O.: *See—*
Lockery, Harry E.; and Ballou, Harold O., 4,138,882, Cl. 73-767.000.
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Shipping container. 4,139,146, Cl. 229-32.000.
Ban, Nobuaki: *See—*
Kobayashi, Fumio; and Ban, Nobuaki, 4,139,075, Cl. 181-148.000.
Bankowski, Richard S.; and Geary, Kermit E., to New Jersey Zinc Company, The. Powder-metallurgy of cobalt containing brass alloys. 4,139,378, Cl. 75-247.000.
Banks, Minnie V. Electrically heated kitchen utensil. 4,139,760, Cl. 219-227.000.
Barber-Colman Company: *See—*
Kuehl, Ronald J., 4,139,327, Cl. 407-28.000.
Barna, Albert N.: *See—*
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,139,699, Cl. 536-109.000.
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Barrentine, Thomas A.; Barrentine, Benjamin F.; and Alford, Reed B., 4,139,230, Cl. 296-26.000.
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Barrette, Richard P.; Glode, John B., Jr.; and Olsen, Richard P., to Electro-Ty, Inc. Bundling tie. 4,138,770, Cl. 24-16.0PB.
Bartel, Marvin. Kiln heat exchanger. 4,139,340, Cl. 432-179.000.
BASF Aktiengesellschaft: *See—*
Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, 4,139,351, Cl. 55-97.000.
Scheuermann, Horst; and Hettche, Albert, 4,139,532, Cl. 546-99.000.
Schweckendiek, Walter; Hiller, Heinrich; and Kohlhaupt, Reinhold, 4,139,543, Cl. 260-381.000.
Zeeh, Bernd; Jung, Johann; and Ammermann, Eberhard, 4,139,641, Cl. 426-69.000.
Bassett, David R., to Union Carbide Corporation. Aqueous vehicles. 4,139,514, Cl. 260-29.60H.
Bates, Kenneth C. Compressor-expander apparatus. 4,138,848, Cl. 60-519.000.
Bauer, Fritz, to Suspa Federungstechnik Fritz Bauer & Sohne OHG. Height-adjustable chair or table pedestal. 4,139,175, Cl. 248-404.000.
Bauer, Gerald L., to Sterling Drug Inc. Removal of solids from a wet oxidation reactor. 4,139,461, Cl. 210-63.00R.
Bauer, Peter. Dispensing pump having no check valves. 4,139,122, Cl. 222-1.000.

Baugh, Claudia: *See*—
Baugh, Ronald; and Baugh, Claudia, 4,138,827, Cl. 34-98.000.
Baugh, Daniel W., Jr.; and Gibbs, Marylu B., to Dow Chemical Company, The. Process for making methyl fluoride. 4,139,568, Cl. 260-653.700.
Baugh, Ronald; and Baugh, Claudia. Wrist mounted hair dryer. 4,138,827, Cl. 34-98.000.
Baughman, Glenn L.; and Stevens, Henry C., to PPG Industries, Inc. Bis (allyl carbonate) compositions and polymerizates therefrom. 4,139,578, Cl. 260-871.000.
Baum, Kurt; Lerdal, Duane A.; and Horn, Jerald S., to United States of America, Navy. Dinitroalkyl and fluorodinitroalkyl silicon compounds. 4,139,403, Cl. 149-88.000.
Baumann, Frederick W.; and Kaczkowski, Bernard C., to General Electric Company. Positioning apparatus for a centrifugal casting machine and means for positioning components thereof for a mold stripping operation. 4,139,049, Cl. 164-292.000.
Bayer Aktiengesellschaft: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,615, Cl. 424-216.000.
Jabs, Gert; and Loew, Gunther, 4,139,686, Cl. 521-121.000.
Kalk, Walter; and Schundehutte, Karl H., 4,139,530, Cl. 544-234.000.
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,139,674, Cl. 428-339.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,636, Cl. 424-322.000.
Stopp, Gerhard; and Schimpf, Rolf, 4,139,558, Cl. 260-562.00A.
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Bazakin, Vladimir I.: *See*—
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G., 4,139,557, Cl. 260-561.00R.
Beard, Colin, to Syntex (U.S.A.) Inc. Anthelmintic 5(6)-benzene ring substituted benzimidazole-2-carbamates. 4,139,626, Cl. 424-267.000.
Beche & Grohs GmbH: *See*—
Kampmann, Walter; and Kampmann, Ingo, 4,138,908, Cl. 76-26.000.
Bechtel International Corp.: *See*—
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Becton, Dickinson and Company: *See*—
Gutcho, Sidney; and Givas, Joan K., 4,139,604, Cl. 424-1.000.
Beebe, Dean L. Collapsible bumper hitch apparatus. 4,139,212, Cl. 280-491.00D.
Beeby, Philip J., to Syntex (U.S.A.) Inc. Cephalosporin type antibacterials. 4,139,618, Cl. 424-246.000.
Beecham Group Limited: *See*—
Gardner, Derek V.; and Goudie, Alexander C., 4,139,621, Cl. 424-250.000.
Rogers, Norman H., 4,139,629, Cl. 424-283.000.
Beecham Inc.: *See*—
Lane, Philip A.; and Brown, Bruce A., 4,139,627, Cl. 424-267.000.
Begin, Louis E.: *See*—
Dunbar, Joseph E.; and Begin, Louis E., 4,139,705, Cl. 544-280.000.
Bell Telephone Laboratories, Incorporated: *See*—
Blahut, Donald E.; and Cooper, James A., Jr., 4,139,907, Cl. 365-104.000.
Blank, Stuart L.; LeCraw, Roy C.; and Wolfe, Raymond, 4,139,905, Cl. 365-33.000.
Kurkjian, Charles R.; and Peterson, George E., 4,139,895, Cl. 364-802.000.
Benavides, Tomas J.: *See*—
Berger, Paul D.; and Benavides, Tomas J., 4,139,546, Cl. 260-448.20E.
Bendix Corporation, The: *See*—
Hoffman, David A., 4,139,238, Cl. 303-7.000.
Ruoff, Carl F., Jr.; and Edmond, James J., 4,138,884, Cl. 73-133.00R.
Sebo, Milan J., 4,139,020, Cl. 137-454.200.
Taplin, Lael B., 4,138,979, Cl. 123-119.0EC.
Bennett, Clive G., to Comalco Aluminium (Bell Bay) Limited. Superplastic aluminium base alloys. 4,139,400, Cl. 148-32.000.
Bennett, Dorothy L. Cable stitch holder for knitting. 4,138,864, Cl. 66-1.00A.
Benoit, Jean L. P. M.; and Warren, Frank Z. Device for driving a needle into a patient. 4,139,011, Cl. 128-329.00R.
Berg, Norman J.; Smith, Bob L., deceased; and by Adams, Allen B., legal representative, to United States of America, Army. Acoustooptic memory correlator. 4,139,277, Cl. 350-358.000.
Berger, Abe, to Bergston & Associates, Inc. Silicone containing bisthioether aromatic amines. 4,139,547, Cl. 260-448.20N.
Berger, Paul D.; and Benavides, Tomas J., to Witco Chemical Corporation. Anionic silicone defoamer. 4,139,546, Cl. 260-448.20E.
Berges, David A., to SmithKline Corporation. 7-Amino-3-(sulfonic acid and sulfamoyl substituted tetrazolythiomethyl)cephalosporin intermediates. 4,139,701, Cl. 544-26.000.
Bergh, Sigvard; Gemmel, Goran; and Aslund, Christer, to Granges Nyby AB. Ferritic chrome steels of high notched bar impact strength and method of making same. 4,139,377, Cl. 75-243.000.
Bergmann, Donald W. Face shield protective system and apparatus. 4,138,746, Cl. 2-424.000.
Bergston & Associates, Inc.: *See*—
Berger, Abe, 4,139,547, Cl. 260-448.20N.
Bergstrom, Lars R. Sailboat construction. 4,138,960, Cl. 114-39.000.
Berin, Ilya S.: *See*—
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.
Beringer, Monique; and Woltmann, Siegfried. Process for the manufacture of a multi-zone tablet and tablet manufactured by this process. 4,139,589, Cl. 264-250.000.
Bernkrant, Keith D. O-ring retainer cap and valve protector. 4,139,202, Cl. 277-11.000.
Berry, James W.; and Markwood, Samuel C., to Owens-Illinois, Inc. Carrier for bottles. 4,139,094, Cl. 206-158.000.
Beschke, Helmut; Friedrich, Heinz; Muller, Klaus-Peter; and Schreyer, Gerd, to Deutsche Gold- Und Silber-Scheideanstalt vormals Roessler. Process for the recovery of nicotinamide. 4,139,536, Cl. 546-317.000.
Besnard, Francois: *See*—
Lutz, Jean; and Besnard, Francois, 4,138,886, Cl. 73-151.000.
Besselman, Charles W., Jr. Solder tray. 4,139,138, Cl. 228-57.000.
Bethlehem Steel Corporation: *See*—
Yerkes, Ronald W.; Hoffner, Joel L.; Galanis, Tom L.; and Hostetter, Richard S., Jr., 4,139,890, Cl. 364-472.000.
Beuther, Harold; and Montagna, Angelo A., to Gulf Research & Development Company. Process for producing benzene. 4,139,452, Cl. 208-107.000.
Beutler, Robert R.: *See*—
Ulmer, Richard W.; and Beutler, Robert R., 4,139,880, Cl. 361-246.000.
Beyersdorf, Hartwig. Smoke alarm. 4,139,770, Cl. 250-381.000.
Biggar, Frank M., Jr.: *See*—
Biggar, Frank M., III, 4,138,944, Cl. 101-247.000.
Biggar, Frank M., III, to Biggar, Frank M., Jr. Print module. 4,138,944, Cl. 101-247.000.
Billingsley, John G. S., to Du Pont de Nemours, E. I., and Company. Apparatus and method. 4,139,309, Cl. 366-186.000.
Biondo, Joseph G.: *See*—
Schroeder, Manfred F.; Biondo, Joseph G.; and Aliotta, Joseph, 4,139,030, Cl. 141-98.000.
bison-werke Bahre & Greten GmbH & Co. KG: *See*—
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Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., 4,139,891, Cl. 364-567.000.
Blahut, Donald E.; and Cooper, James A., Jr., to Bell Telephone Laboratories, Incorporated. Integrated read only memory. 4,139,907, Cl. 365-104.000.
Blair, Gerald E.; Shafer, John H.; Meyers, John J.; and Smith, Frank T. J., to Eastman Kodak Company. Method of molding glass elements and element made. 4,139,677, Cl. 428-409.000.
Blank, Stuart L.; LeCraw, Roy C.; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Magnetic devices utilizing garnet epitaxial materials. 4,139,905, Cl. 365-33.000.
Blessing, Hubert; and Ray, Ted M., to Levi Strauss & Company. Vacuum thread cutter for use in an automated textile sewing operation. 4,138,957, Cl. 112-287.000.
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., to Polaroid Corporation. Photographic products and processes employing pH sensitive filter dyes. 4,139,381, Cl. 96-3.000.
Blount, David H. Process for the production of organic hydroxy silicate compounds and their condensation products. 4,139,549, Cl. 260-448.80R.
Blue, Joan W. Gemstone cloisonne. 4,139,667, Cl. 428-38.000.
Blum, Albert. Apparatus for introducing air into a liquid including a liquid pump mounted within an aerator pressure chamber. 4,139,579, Cl. 261-29.000.
BM-Elektronik Meletzky KG: *See*—
Falkenberg, Werner, 4,139,733, Cl. 179-1.00F.
Bocca, Giuseppe; Mostura, Tiziano; and Valli, Bruno, to Elemac S.p.A. Unit for programmed control of blanking machines. 4,138,912, Cl. 83-69.000.
Bodin, Leslie J., to Burroughs Corporation. Hyphenation controller. 4,139,902, Cl. 364-900.000.
Bodor, Nicolae S.; and Sloan, Kenneth B., to INTERx Research Corporation. 1,2-Diphenyl-3,5-ditrifluoroacetyloxy-4-butyl-5-hydroxy-3-pyrazoline. 4,139,709, Cl. 548-356.000.
Boer, Machiel; and Dikeman, James E., to Tektronix, Inc. Impedance-switching connector. 4,139,817, Cl. 324-72.500.
Bondur, James A.; and Pogge, Hans B., to International Business Machines Corporation. Reactive ion etching method for producing deep dielectric isolation in silicon. 4,139,442, Cl. 204-192.00E.
Boots Company Limited, The: *See*—
Copping, Leonard G.; and Garrod, John F., 4,139,365, Cl. 71-92.000.
Borg-Warner Corporation: *See*—
Overzet, John K.; and Studtmann, George H., 4,139,885, Cl. 363-58.000.
Borgman, Neil E.: *See*—
Profio, Richard L.; and Borgman, Neil E., 4,139,240, Cl. 305-39.000.
Borror, Alan L.; Foley, James W.; and Lee, John W., Jr., to Polaroid Corporation. Cyclic amino containing benzisothiazoles. 4,139,704, Cl. 544-135.000.
Borror, Alan L.: *See*—
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,139,381, Cl. 96-3.000.
Bose, Phillip R., to Chevron Research Company. Electrofiltration with bi-directional potential pretreatment. 4,139,441, Cl. 204-191.000.
Boswell, Robert F., Jr.; and Duncan, Robert L., Jr., to A. H. Robins

Company, Inc. 1-Substituted-3-aminoethoxypyrrolidines and use thereof. 4,139,620, Cl. 424-248.570.
Bott, John A. Screen for the window at the top of a vehicle door. 4,139,233, Cl. 296-84.00M.
Bottcher, Wolfgang: *See*—
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Bottu: *See*—
Karadavidoff, Isaac; Stjepanovic, Milorad; Moreau, Michele; and Rohrbach, Philippe, 4,139,631, Cl. 424-285.000.
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Jahan, Christian C.; and Bouvin, Jacques, 4,138,855, Cl. 62-112.000.
Bouygues, Jean; Dubos, Jacques; and Jacques, Andre, to Thomson-CSF. Optical fibers bundles connector. 4,139,260, Cl. 350-96.220.
Bower, Lewis R.; and Wake, Malcolm, to Fletcher Sutcliffe Wild Limited. Mine roof supports. 4,139,325, Cl. 405-291.000.
Bower, Lewis R.; and Wake, Malcolm, to Fletcher Sutcliffe Wild Limited. Mine roof supports. 4,139,326, Cl. 405-292.000.
Bowman, Robert G.; and Russell, John G., to C. R. Gibson Company, The. Stackable container tray for storing and displaying flat objects. 4,139,097, Cl. 206-425.000.
Bracco Industria Chimica S.p.A.: *See*—
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Brady, Sherwin L.: *See*—
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Brandenstein, Manfred: *See*—
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Brandstetter, Friedrich P., to Gebirgssicherung - Ges.m.b.H. Rock anchor. 4,139,323, Cl. 405-260.000.
Braun, Albert: *See*—
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.
Bresie, Don A.; and Fowler, Donald W., to Texas Gas Transport Company. Method and system for transporting natural gas to a pipeline. 4,139,019, Cl. 137-351.000.
Breuer, Friedrich; Brotzmann, Karl; Duderstadt, Gunter; Fichte, Rudolf; and Stadler, Fritz, to Gesellschaft fur Elektrometallurgie mbH. Method of refining ferro-alloys. 4,139,370, Cl. 75-60.000.
Bricot, Claude: *See*—
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Bridgestone Tire Company Limited: *See*—
Samoto, Masao; Ueno, Kazumi; and Tanaka, Kazuhiro, 4,139,040, Cl. 152-362.00R.
Bristol-Myers Company: *See*—
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., 4,139,533, Cl. 546-156.000.
Lim, Gary; and Monkovic, Ivo, 4,139,534, Cl. 546-74.000.
Brodmann, George L.; and Moses, Dudley K., to PPG Industries, Inc. Chemical desizing of fiber glass fabric. 4,139,357, Cl. 65-30.00R.
Brody, Philip S., to United States of America, Army. Photovoltaic-ferroelectric data recorder. 4,139,908, Cl. 365-117.000.
Broggi, Renato; and Falciani, Marco, to DOBFAR S.p.A. Process for preparing cephalosporines. 4,139,702, Cl. 544-27.000.
Broken Hill Proprietary Company Limited, The: *See*—
Roper, Howard F., 4,138,961, Cl. 114-72.000.
Brolin, Hans R., to AB Perma System. Ball cord lock. 4,139,044, Cl. 160-321.000.
Broll, Madeleine: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; Eymard, Pierre; Werbenec, Jean-Pierre; and Broll, Madeleine, 4,139,634, Cl. 424-274.000.
Brooks, John H.: *See*—
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Brooks & Perkins, Incorporated: *See*—
Mollon, Leslie, 4,139,098, Cl. 206-507.000.
Brosseau, Timothy L.; and Liberatore, Arthur, to United States of America, Army. Drum cartridge - magazine. 4,138,923, Cl. 89-33.00D.
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Brown, Jerry H.: *See*—
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Brown, Joseph W. Temperature indicating probe. 4,138,890, Cl. 73-374.000.
Brown, Marion L.: *See*—
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Brown, Wayne C. Portable tank for rural fire fighting. 4,139,033, Cl. 141-363.000.
Brunner, Hellmut, to Ciba-Geigy Corporation. New pharmaceutical preparations for the treatment of hypertonia. 4,139,633, Cl. 424-274.000.
Brunswick Corporation: *See*—
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Brusasco, Enzo, to Roltra S.p.A. Screw-nut screw transmission coupling with ball circulation. 4,138,902, Cl. 74-424.80R.
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Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., to Bristol-Myers Company. Bicyclo[2,2,1]heptane-2,3-diendo carboxylic acid imide esters of quinoline carboxylic acid. 4,139,533, Cl. 546-156.000.
Buckley, Donald J.: *See*—
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Burdette, Stephen D.; and Wenning, Michael L., to Massey-Ferguson Inc. Hydrostatic transmission control. 4,138,903, Cl. 74-473.00R.
Burrello, Daniel M.: *See*—
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Burroughs Corporation: *See*—
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Franke, Robert H., 4,139,147, Cl. 235-302.000.
Lewis, Terrence E.; and Abel, Kenneth N., 4,139,859, Cl. 357-72.000.
Schneider, Robert P., 4,139,818, Cl. 324-73.00R.
Tulpule, Bhalchandra R.; and Gajski, Daniel D., 4,139,899, Cl. 364-900.000.
Burton, Albert H.: *See*—
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Busler, Albert: *See*—
Richter, Martin; and Busler, Albert, 4,138,922, Cl. 85-62.000.
Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbache Hutte. Transport device for the filter plates of a filter press. 4,139,091, Cl. 198-732.000.
Butler, Patrick J. Device for positioning anti-skid chains. 4,139,039, Cl. 152-233.000.
Buxbaum, Lothar, to Ciba-Geigy Corporation. Copolyesters of triazinedicarboxylic acids. 4,139,512, Cl. 260-22.00D.
Byrnes, Francis R., to Center Compression Lock Company, Inc. Tamperproof hydrant lock with controlled shock absorber. 4,139,016, Cl. 137-296.000.
Bystedt, Nils T.; and Lundin, Karl B., to Kochums Industri Aktiebolag. Means and method for measuring, adjusting and feeding of logs into a saw or the like. 4,139,035, Cl. 144-312.000.
C-G Corp.: *See*—
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C. R. Gibson Company, The: *See*—
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Cadle, Michael D. Carpet cleaning attachment. 4,138,760, Cl. 15-321.000.
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Campbell, John R., to General Electric Company. Process for preparing diphenyl haloethylenes. 4,139,721, Cl. 568-641.000.
Campbell, Robert W., to Chevron Research Company. Process for applying a smooth coating of plasticized sulfur composition. 4,139,663, Cl. 427-422.000.
Campbell Soup Company: *See*—
Small, Robert E.; Hildebolt, William M.; and Hundt, Murray T., 4,139,648, Cl. 426-511.000.
Cannon, Collins P.: *See*—
Meiss, James D.; and Cannon, Collins P., 4,139,724, Cl. 174-19.000.
Canon Kabushiki Kaisha: *See*—
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Matsumoto, Kazuya, 4,139,257, Cl. 350-6.100.
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Marano, Carlos J.; and Capisano, Enrique, 4,139,312, Cl. 401-176.000.
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Kohler, Kurt, 4,139,280, Cl. 351-38.000.
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Hill, C. Lee; and Carmack, John E., 4,139,236, Cl. 298-14.000.
Carman, Richard W.; and Larsen, Glen D., to Southern Railway Company. Anti-pilferage latching device. 4,139,226, Cl. 292-285.000.
Carmichael, James T., to W-K-M Wellhead Systems, Inc. Well casing hanger assembly. 4,139,059, Cl. 166-208.000.
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Cartland, William H., to Rheem Manufacturing Company. Solar heater freeze protection system. 4,138,996, Cl. 126-271.000.
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Castillo, Herman B., to Alco Foodservice Equipment Company. Single pump recirculating carbonator. 4,139,123, Cl. 222-56.000.
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Castor, William M.; and Menegos, Pete J., to Dow Chemical Company, The. Dehydrogenation catalyst tablet and method for making same. 4,139,497, Cl. 252-470.000.
Catalano, Joseph R. Nail driver. 4,139,136, Cl. 227-109.000.
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Peterson, Wayne A., 4,138,929, Cl. 91-446.000.
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Faron, Robert; and Cathala, Annie, 4,139,447, Cl. 204-239.000.
Catotti, Arthur J.: *See—*
Pensabene, Saverio F.; and Catotti, Arthur J., 4,139,423, Cl. 204-2.100.
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Unruh, Jerry D.; and Wade, Leslie E., 4,139,565, Cl. 260-604.0HF.
Celanese Polymer Specialties Company: *See—*
Anderson, Terry L., 4,139,510, Cl. 260-18.00N.
Center Compression Lock Company, Inc.: *See—*
Byrnes, Francis R., 4,139,016, Cl. 137-296.000.
Centro-Maskin Goteborg AB: *See—*
Sipek, Ladislav, 4,139,757, Cl. 219-68.000.
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Coupek, Jiri; Mikes, Otakar; Strop, Petr; and Krivakova, Miroslava, 4,139,684, Cl. 521-27.000.
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Hellstrom, Melbourne J., 4,139,776, Cl. 250-445.00T.
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Chamberlin, Thomas A.; and Tomalia, Donald A., to Dow Chemical Company, The. Vinyl substituted cyclic polyethers. 4,139,539, Cl. 260-338.000.
Champion International Corporation: *See—*
McLaren, Edwin C., 4,139,119, Cl. 220-418.000.
Roccaforte, Harry I., 4,139,121, Cl. 221-302.000.
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Chandhok, Vijay K., to Crucible Inc. Ceramic core for use in making molds and dies. 4,139,393, Cl. 106-38.300.
Chandra, Ashok K.; and Wong, Chak-K., to International Business Machines Corporation. Bubble lattice files with selected access channel positioning. 4,139,904, Cl. 365-3.000.
Chaney, Preston E.; and Sharp, H. Eugene, to Sperry-Sun, Inc. Wellbore instrument hanger. 4,139,836, Cl. 340-18.0NC.
Chang, Chow M. Non-knifing plastic adhesive tape for packaging and sealing purpose. 4,139,669, Cl. 428-167.000.
Chang, Fung Y.: *See—*
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Marie, Gilbert; Lang, Andre; and Chapelet, Gilbert, 4,139,417, Cl. 252-51.50A.
Chapman, Frederic F., to Hawker Siddeley Canada Ltd. Waferizer. 4,139,034, Cl. 144-172.000.
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Chase, Alan L., to Allis-Chalmers Corporation. Discharge vane arrangement for a powered snow thrower. 4,138,829, Cl. 37-43.00D.
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Chasman, Richard A.; Dunlap, Richard P.; and Hinshaw, Jerald C., to Eastman Kodak Company. Photographic elements containing ballasted electron-accepting nucleophilic displacement compounds. 4,139,379, Cl. 96-3.000.
Chauvy, Jean-Daniel, to Gillette Company, The. Shaving foil. 4,138,811, Cl. 30-346.510.
Chen, Thomas T., to Rockwell International Corporation. Switch for fault tolerant bubble domain memory systems. 4,139,906, Cl. 365-15.000.
Chevron Research Company: *See—*
Anshus, Byron E.; Katsumoto, Kiyoshi; and Serkes, Ira M., 4,139,696, Cl. 528-312.000.
Bacskai, Robert, 4,139,525, Cl. 528-302.000.
Bose, Phillip R., 4,139,441, Cl. 204-191.000.
Campbell, Robert W., 4,139,663, Cl. 427-422.000.
Wall, Robert G.; and Suzuki, Shigeto, 4,139,556, Cl. 562-540.000.
Ziman, Stephen D., 4,139,363, Cl. 71-91.000.
Chicago Switch, Inc.: *See—*
Farrell, Guy M.; Gaber, Martin; and Spedale, Joseph J., 4,139,746, Cl. 200-16.00D.
Chidsey, Charles A., III, to Upjohn Company, The. 6-Amino-4-(substituted amino)-1,2-dihydro-1-hydroxy-2-iminopyrimidine, topical compositions and process for hair growth. 4,139,619, Cl. 424-45.000.
Chiesa, Luigi, to Morenar S.A. Photographic apparatus for producing an identity card. 4,139,292, Cl. 354-109.000.
Chimo Equipment Ltd.: *See—*
Logan, Robert W., 4,138,887, Cl. 73-151.000.
Chiodini, Fernando, to Fenco Corporation. Combination sinker and bait juice dispenser. 4,138,794, Cl. 43-43.140.
Chisum, Finis L. Truck frame alignment apparatus. 4,138,876, Cl. 72-457.000.
Chlorine Engineers Corp., Ltd.: *See—*
Goto, Nobutaka; and Naito, Michiru, 4,139,449, Cl. 204-270.000.
Chlystun, Walter K. Container with nestable pouring spout. 4,139,129, Cl. 222-529.000.
Cholet, Jacques; and Magneville, Pierre, to Institut Francais du Petrole. Device for transmitting acoustic waves through a liquid medium. 4,139,835, Cl. 340-12.00R.
Chrambach, Andreas; and Nguyen, Nga Y., to United States of America, United States. Electrofocusing in buffers. 4,139,440, Cl. 204-180.00G.
Chrysler Corporation: *See—*
Crall, Frederick W., 4,138,976, Cl. 123-117.00R.
Riley, Donald E.; Graham, Kenneth A.; Scott, Ian J. C.; and Ogden, S. Duane, 4,139,583, Cl. 261-65.000.
Ciba-Geigy AG: *See—*
Scheidegger, Rudolf; and Zurrer, August, 4,139,431, Cl. 204-109.000.
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Brunner, Hellmut, 4,139,633, Cl. 424-274.000.
Buxbaum, Lothar, 4,139,512, Cl. 260-22.00D.
Ramey, Chester E.; and Luzzi, John J., 4,139,520, Cl. 260-45.80N.
Reinehr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,139,560, Cl. 260-570.80R.
Cibulka, Josef; Hlousek, Jaroslav; Jelinek, Richard; Krtek, Jan; and Winkler, Jiri, to CKD Praha, oborovy podnik. Test circuit for indication of deviation of source voltages from their set points. 4,139,788, Cl. 307-350.000.
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Clare, Richard D.: *See—*
Sontheimer, Carl G.; and Clare, Richard D., 4,139,068, Cl. 177-1.000.
Clark, Merlin W. Two-stage hydraulic flush control device. 4,138,749, Cl. 4-388.000.
Clark, Trevor. Flexible stile or rope ladder for climbing poles or like members. 4,139,079, Cl. 182-93.000.
Clarke, Graham M., to Ferranti Limited. Surface inspection systems. 4,139,307, Cl. 356-446.000.
Clecak, Nicholas J.; Grant, Barbara D.; Jaffe, Annette B.; and Keller, Gary S., to International Business Machines Corporation. Electrochromic display devices comprising substituted fluorene compounds. 4,139,276, Cl. 350-357.000.
Clem, Arthur G., to American Colloid Company. Method of making a water barrier panel. 4,139,588, Cl. 264-232.000.
Clements, Lloyd W. Irrigation pipe coupler. 4,139,223, Cl. 285-99.000.
Cloud, James Z., Jr.: *See—*
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CMI Corporation: *See—*
Jakob, Herbert E.; and Silbernagel, Richard A., 4,139,318, Cl. 404-90.000.
Cohen, Jules B.; and Principe, Peter P., to United States of America, U.S. Environmental Protection Agency. Vapor emission recovery and measuring method and vapor recovery collection boot. 4,138,880, Cl. 73-23.000.
Cohen, Seymour H.; and Fabula, Joseph J., to RCA Corporation. Process for manufacturing a radiation hardened oxide. 4,139,658, Cl. 427-93.000.
Cole, Robert J. Air ring for the production of blown film. 4,139,338, Cl. 425-72.00R.
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Schreiber, Ronald S., 4,139,608, Cl. 424-49.000.
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Tomlinson, Kenneth; and Duff, Edward J., 4,139,599, Cl. 423-308.000.
Colletta, Angelo: *See—*
Palumbo, Luigi; and Colletta, Angelo, 4,139,416, Cl. 201-8.000.
Collins, Charles G., to Shell Oil Company. Apparatus for producing catalyst pellets of uniform size. 4,139,134, Cl. 225-97.000.

Collins, Maynard H. Carburetor. 4,139,582, Cl. 261-51.000.
Columbia Steel Casting Co., Inc.: *See—*
Hay, Harold L., 4,139,237, Cl. 299-94.000.
Comalco Aluminium (Bell Bay) Limited: *See—*
Bennett, Clive G., 4,139,400, Cl. 148-32.000.
Combis, Chris: *See—*
Moore, Harry O., 4,139,120, Cl. 221-213.000.
Combs, L. Paul; Okuda, Allan S.; and Russell, Larry H., to United States of America, U.S. Environmental Protection Agency. High efficiency furnace with low polluting emissions. 4,138,986, Cl. 126-116.00R.
Combustion Engineering, Inc.: *See—*
Giuggio, Nicholas; and Noyes, Richard C., 4,139,414, Cl. 176-86.00R.
Combustion Unlimited Incorporated: *See—*
Straitz, John F., III, 4,139,339, Cl. 431-202.000.
Commault, Yves; and Campan, Yves, to Thomson-CSF. Transition device between a coaxial line and a wave-guide. 4,139,828, Cl. 333-26.000.
Commissariat a l'Energie Atomique: *See—*
Levy, Jacques; and Viaud, Jean-Luc, 4,139,315, Cl. 403-19.000.
Compagnie Generale d'Electricite: *See—*
Appleby, Anthony J.; and Jacquelin, Jean, 4,139,679, Cl. 429-21.000.
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Lamy, Jacques E., 4,138,853, Cl. 405-171.000.
Computer Peripherals, Inc.: *See—*
Moore, Donn F., 4,139,145, Cl. 228-212.000.
Conforti, Frederick J., to Pittway Corporation. Method and apparatus for supervising battery energy level. 4,139,846, Cl. 340-636.000.
Conley, William M. Solar heater. 4,138,993, Cl. 126-271.000.
Continental Oil Company: *See—*
Radd, Fred J.; and Oertle, Donald H., 4,139,814, Cl. 324-33.000.
Control Data Corporation: *See—*
White, Philip E.; and Rust, Robert C., 4,139,886, Cl. 365-1.000.
Conway, Tim D., to Sunkist Growers, Inc. Apparatus and method for counting fruits and other objects. 4,139,766, Cl. 235-92.0PK.
Cook, Calvin S.; and Merl, Carl J., to Louis Marx & Co., Inc. Toy plane with parachute and launcher. 4,138,799, Cl. 46-86.00R.
Cook, Gerald H., to Polaroid Corporation. Rear projection viewer having automatically erecting auxiliary screen. 4,139,283, Cl. 352-104.000.
Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., to Mississippi Chemical Corporation. Ammonium nitrate neutralization. 4,139,601, Cl. 423-396.000.
Cooke, Carl W. Safety closure cap. 4,139,112, Cl. 215-217.000.
Cooke, Claude E., Jr.: *See—*
Muecke, Thomas W.; Cooke, Claude E., Jr.; and Gruesbeck, Clay, Jr., 4,139,060, Cl. 166-281.000.
Cooley, Lawrence E. Attachable coaster-like device. 4,138,763, Cl. 16-18.00R.
Cooper, Carl. Hole filling machine. 4,138,832, Cl. 37-142.500.
Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Impact resistant polyphenylene ether resin compositions containing EPDM rubber-modified alkenyl aromatic resins and hydrogenated radial teleblock copolymers. 4,139,574, Cl. 260-836.000.
Cooper, Herbert. Enclosure extension for vehicle. 4,139,229, Cl. 296-23.00C.
Cooper, James A., Jr.: *See—*
Blahut, Donald E.; and Cooper, James A., Jr., 4,139,907, Cl. 365-104.000.
Cooper Laboratories, Inc.: *See—*
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Coors Container Company: *See—*
McMillin, Danny L.; and Sirvet, Enn, 4,138,941, Cl. 101-40.000.
Copal Company Limited: *See—*
Ishiguro, Yasuo; and Kurosu, Tomio, 4,139,282, Cl. 352-91.00C.
Copping, Leonard G.; and Garrod, John F., to Boots Company Limited, The. Method of regulating plant growth. 4,139,365, Cl. 71-92.000.
Corey, Arthur E. Female incontinence device. 4,139,006, Cl. 128-127.000.
Corning Glass Works: *See—*
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Holecek, Rudolph; Mouchikhine, Paul; and Renault, Serge A., 4,139,358, Cl. 65-68.000.
Cosco, Robert J.; and Ingalls, Jeffrey D., to GTE Sylvania Incorporated. Multiflash system. 4,139,805, Cl. 315-241.00R.
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Costin, Charles R., to Rohm and Haas Company. Quinolizinium anion exchange resins and monomers and methods for making them. 4,139,459, Cl. 210-37.00R.
Coupek, Jiri; Mikes, Otakar; Strop, Petr; and Krivakova, Miroslava, to Ceskoslovenska akademie ved. Method for preparation of hydrophilic polymeric ion exchanging gels. 4,139,684, Cl. 521-27.000.
Coward, Michael, to Master Chemical Corporation. Apparatus for and method of clarifying sump content. 4,139,464, Cl. 210-74.000.
Cox, Charles W.: *See—*
Malm, Robert N.; and Cox, Charles W., 4,139,794, Cl. 313-220.000.
Cox, Robert J., to Pennwalt Corporation. Process for forming fluorspar compacts. 4,139,587, Cl. 264-123.000.
Coy, David H.; and Kastin, Abba J. Novel nonapeptides, intermediates therefor, and compositions and methods employing said nonapeptides. 4,139,504, Cl. 260-8.000.
Crabtree, Allen; Marshall, William J.; and Plant, David W., to Imperial Chemical Industries Limited. Dyeing process and compositions for use therein. 4,139,345, Cl. 8-25.000.
Craig, Frederick W. Post driving attachment for tractor. 4,139,067, Cl. 173-100.000.
Crall, Frederick W., to Chrysler Corporation. Engine timing system with automatic selective utilization of first and second signals. 4,138,976, Cl. 123-117.00R.
Creative Ventures, Inc.: *See—*
Liljenwall, James; and Moss, David, 4,139,837, Cl. 340-146.3SY.
Crepeau, Philip C.; and Kaino, Masami S., to NCR Corporation. Display system. 4,139,149, Cl. 235-383.000.
Crivello, James V., to General Electric Company. Coating method and composition using cationic photoinitiators polythio components and polyolefin components. 4,139,385, Cl. 96-35.100.
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., to Westinghouse Electric Corp. Puffer-type compressed-gas circuit-interrupter having improved separable contact structure. 4,139,753, Cl. 200-148.00A.
Cromer, Charles F.: *See—*
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Crompton & Knowles Corporation: *See—*
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Cross Manufacturing, Inc.: *See—*
Ailshie, Roger H.; McMillen, Kenneth G., deceased; and McMillen, Leanne S., administrator, 4,139,021, Cl. 137-596.130.
Crossland, William A.; Morrissy, Joseph H.; and Needham, Barbara, to International Standard Electric Corporation. Method for preparing and operating a smectic liquid crystal display cell having indefinite storage properties. 4,139,273, Cl. 350-340.000.
Crowe, Norman P.; and Lohse, Joseph M., to Multifold-International, Inc. Machine for placing flat articles in a case. 4,138,836, Cl. 53-500.000.
Crucible Inc.: *See—*
Chandhok, Vijay K., 4,139,393, Cl. 106-38.300.
Cuisinarts, Inc.: *See—*
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Cummins Engine Company, Inc.: *See—*
Wilber, Dennis A., 4,138,849, Cl. 60-602.000.
Cunningham, George M., to Corning Glass Works. Extrusion die conversion. 4,139,144, Cl. 228-182.000.
Cunningham, Michael P.: *See—*
Rauner, Frederick J.; Cunningham, Michael P.; and Van Hanehem, Richard C., 4,139,390, Cl. 96-91.00N.
Curtis, David L.; and Curtis, John L. Divider gear case support for articulated vehicles. 4,139,073, Cl. 180-51.000.
Curtis Instruments, Inc.: *See—*
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Cutler-Hammer, Inc.: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.
Dailey, George F.; and Koroly, James S., to Westinghouse Electric Corp. Tool for forming rectangular cross-sectional conduit ends. 4,138,873, Cl. 72-316.000.
Daimler-Benz Aktiengesellschaft: *See—*
Schaal, Hans, 4,139,053, Cl. 165-71.000.
Daly, Morgan A.; and Yager, Paul R. Shrink wrapping. 4,139,099, Cl. 206-575.000.
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A. Copper-based alloy. 4,139,372, Cl. 75-162.000.
Danfoss A/S: *See—*
Graversen, Niels P. G.; and Porland, John, 4,139,150, Cl. 236-1.00B.
Dankowski, Gerhard. Cooling system bracket assembly for automotive vehicles. 4,138,857, Cl. 62-239.000.
Dart Industries Inc.: *See—*
Steward, Frederick A.; and Weet, James H., 4,139,429, Cl. 204-105.00R.
David, Loic; and Handlbauer, Peter. Apparatus for the manufacture of orthopedic insoles. 4,139,337, Cl. 425-2.000.
Davis, Arnold: *See—*
Hooper, Peter E., 4,138,875, Cl. 72-307.000.
Davis, George B. Electrically heated mold for making test specimens of concrete. 4,138,892, Cl. 73-432.0SD.
Davis, Gerald T.; Schwab, Gerhart; and Shackle, Dale R., to Mead Corporation, The. Process for producing pressure-sensitive carbonless manifolds. 4,139,218, Cl. 282-27.500.
Davis, Gerald T.; Schwab, Gerhart; and Shackle, Dale R., to Mead Corporation, The. Chromogenic hot melt coating compositions. 4,139,392, Cl. 106-14.500.
Dawson, Anthony. Motorcycle formed of detachable frame members. 4,139,072, Cl. 180-33.00A.

Dayco Corporation: *See—*
Richmond, Kenneth D.; Hill, Jerry W.; Regan, Joseph P.; and Huber, Walter E., 4,139,406, Cl. 156-140.000.
De la Moneda, Francisco H.; and Kotecha, Harish N., to International Business Machines Corporation. Inverter with improved load line characteristic. 4,138,782, Cl. 29-571.000.
Dean, Albert J.; and Ross, Francis J., to Du Pont de Nemours, E. I., and Company. Preparation of alkali metals. 4,139,428, Cl. 204-68.000.
Dearborn, Harold R., to Northern Telecom Limited. Machine for clinching a multiple lead component. 4,138,785, Cl. 29-741.000.
de Cointet de Fillain, Paul: *See—*
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Goodney, Thomas O.; Johannsen, Donald O.; and Kubesheski, John T., 4,139,066, Cl. 172-803.000.
Hengen, Edward J., 4,139,013, Cl. 130-27.00H.
Love, Mahlon L., 4,138,837, Cl. 56-11.200.
Deffeyes, Kenneth S.: *See—*
Ghiringhelli, Hugh A.; and Deffeyes, Kenneth S., 4,139,432, Cl. 204-110.000.
Dennhoven, Manfred; Kunze, Claus; and Kuehn, Rainhard, to Heimann GmbH. Device for examining luggage by means of X-rays. 4,139,771, Cl. 250-408.000.
Dennington, Simon P. J., to International Paint Co. Ltd., The. Anti-fouling paint containing a copolymer of a triorganotin salt of an unsaturated carboxylic acid. 4,139,515, Cl. 260-29.6MM.
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Huppi, Gerhard; DeSilva, Wijitha; and Ryser, Gottlieb, 4,139,367, Cl. 71-94.000.
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Amann, Herbert; and Morlock, Gerhard, 4,139,575, Cl. 260-849.000.
Beschke, Helmut; Friedrich, Heinz; Muller, Klaus-Peter; and Schreyer, Gerd, 4,139,536, Cl. 546-317.000.
De Weese, Ralph M. Corn popper. 4,138,937, Cl. 99-323.500.
De Winter, Walter F.: *See—*
Van Landeghem, Willy K.; Timmerman, Daniel M.; Willem, Arnold A.; and De Winter, Walter F., 4,139,768, Cl. 250-315.00A.
Dial, Howard S. Floating cover assembly. 4,139,117, Cl. 220-218.000.
Diamond, Harvey. Method and apparatus for contraception. 4,139,007, Cl. 128-138.00R.
Diamond International Corporation: *See—*
Printz, Warren G., 4,139,412, Cl. 162-276.000.
Diamond, Julius; and Wohl, Ronald A., to Cooper Laboratories, Inc. 3-Aryloxy-1-(2- or 4-iminodihydro-1-pyridyl)-2-propanol antiarrhythmic compounds. 4,139,537, Cl. 546-309.000.
Diamond Shamrock Corporation: *See—*
Wade, Keith O.; and Brown, Jerry H., 4,139,499, Cl. 521-32.000.
Dickey, Gilbert C. Safety release pipe cap. 4,139,005, Cl. 138-89.000.
Dickson, Peter G., to Marine Exploration Limited. Marine buoy. 4,138,752, Cl. 9-8.00R.
Diddens, Paul A.: *See—*
Peterson, Dean M.; and Diddens, Paul A., 4,139,856, Cl. 346-163.000.
Diebold, Gerard J.: *See—*
Aneshansley, James T.; Diebold, Gerard J.; and Thumim, Alfred I., 4,139,294, Cl. 354-217.000.
Diehl GmbH & Co.: *See—*
Postler, Gunter; Furst, Wilhelm; Liebl, Norbert; and Rudenauer, Werner, 4,138,946, Cl. 102-210.000.
Diesel Kiki Co., Ltd.: *See—*
Uchida, Kazuo, 4,139,158, Cl. 239-533.120.
Dietrich, Oelhschlagel: *See—*
Kawano, Hideo; Mitsugi, Sadahiko; Dietrich, Oelhschlagel; and Yamaji, Kenkichi, 4,138,871, Cl. 72-60.000.
Digel, David B.: *See—*
Henderson, David; and Digel, David B., 4,138,757, Cl. 15-100.000.
Dikeman, James E.: *See—*
Boer, Machiel; and Dikeman, James E., 4,139,817, Cl. 324-72.500.
Dilo, Richard, to Rontex America Inc. Apparatus for producing needled, non-woven tubing. 4,138,772, Cl. 28-110.000.
Dixon, Kenneth W., to GAF Corporation. Preparation of insoluble polyvinylpyrrolidone. 4,139,688, Cl. 526-41.000.
Dobberpuhl, Dale R., to Deere & Company. Rotary tiller and belt guard mounting therefor. 4,139,064, Cl. 172-43.000.
DOBFAR S.p.A.: *See—*
Broggi, Renato; and Falciani, Marco, 4,139,702, Cl. 544-27.000.
Dr. Ralph M. Grant Engineering Consultants, Inc.: *See—*
Hung, Yau Y.; and Grant, Ralph M., 4,139,302, Cl. 356-32.000.
Dodge, Walton L.; and Dodge, Wayne T. Chimney cleaning system and chimney cleaning element. 4,138,758, Cl. 15-243.000.
Dodge, Wayne T.: *See—*
Dodge, Walton L.; and Dodge, Wayne T., 4,138,758, Cl. 15-243.000.
Dominion Engineering Works Limited: *See—*
Guerguerian, Rhual L., 4,139,244, Cl. 308-9.000.
Domis, Emiel De Senerpont; and Cadwell, Robert M., to Acurex Corporation. Digital weighing method. 4,139,069, Cl. 177-1.000.
Donnelly Mirrors, Inc.: *See—*
Morgan, Cleon, 4,139,234, Cl. 296-84.00R.
Donofrio, John D., to Joanna Western Mills Company. Window shade slat. 4,139,043, Cl. 160-236.000.
Dorawala, Tansukhlal G.; Kerr, Edwin R.; Kochis, Robert G.; and Koniz, Leon F., to Texaco Inc. Novel method for preparing a high purity alumina. 4,139,491, Cl. 252-440.000.
Dorawala, Tansukhlal G.; Reinhard, Russell R.; and Lewis, Paul H., to Texaco Inc. Catalyst for dealkylating an alkylaromatic hydrocarbon. 4,139,496, Cl. 252-465.000.
Dorfman, Bertrand; and Zadikow, Victor. Carrier current communications system. 4,139,735, Cl. 179-2.50R.
Dotson, James T. Panel mounting apparatus. 4,139,270, Cl. 350-296.000.
Douglas, George, to Selective Licensing Incorporated. Method of preparing a fruit or vegetable puree. 4,139,647, Cl. 426-482.000.
Dover Corporation: *See—*
Taylor, Charles W.; Lasater, Donald A.; and Ebbesmeyer, Steven R., 4,139,032, Cl. 141-206.000.
Wood, Chester W.; and Guertin, Robert W., 4,139,031, Cl. 141-206.000.
Dow Chemical Company, The: *See—*
Baugh, Daniel W., Jr.; and Gibbs, Marylu B., 4,139,568, Cl. 260-653.700.
Castor, William M.; and Menegos, Pete J., 4,139,497, Cl. 252-470.000.
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,139,539, Cl. 260-338.000.
Dunbar, Joseph E.; and Begin, Louis E., 4,139,705, Cl. 544-280.000.
Dowa Mining Co., Ltd.: *See—*
Yabuuchi, Eizo; and Fukuda, Katsutake, 4,139,456, Cl. 210-7.000.
Doyle, George H.; and Johnston, John R. Flat plate solar collector system. 4,138,989, Cl. 126-270.000.
Dracka, Oldrich: *See—*
Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,139,457, Cl. 210-20.000.
Dreesen, Lillian: *See—*
Dreesen, William R.; and Dreesen, Lillian, 4,139,195, Cl. 273-75.000.
Dreesen, William R.; and Dreesen, Lillian. Automatic powder dispenser for tennis racket handles and the like. 4,139,195, Cl. 273-75.000.
Dreibus, Perry J.: *See—*
Cerf, Donald B.; and Dreibus, Perry J., 4,139,232, Cl. 296-66.000.
Dresser Industries, Inc.: *See—*
Garrison, Stephen N., 4,139,203, Cl. 277-56.000.
Sample, Thomas E., Jr., 4,139,462, Cl. 210-72.000.
Drewes, Harold R., to Du Pont de Nemours, E. I., and Company. Preparation of hexahydroindazolones. 4,139,710, Cl. 548-359.000.
Drummond, Gordon E. Board game apparatus. 4,139,199, Cl. 273-243.000.
Drummond, Russell F., to U.S. Industries, Inc. Chiller for edible products. 4,138,860, Cl. 62-375.000.
Druzhinin, Valery P.: *See—*
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
Dubos, Jacques: *See—*
Bouygues, Jean; Dubos, Jacques; and Jacques, Andre, 4,139,260, Cl. 350-96.220.
Dubot, Guy; and Lemercier, Jacques, to Fabrique d'Horlogerie la Vedette, S.A. Light-responsive electric switch. 4,139,802, Cl. 315-151.000.
Dubovik, Alexandr I.: *See—*
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.
Duck, Gerhard; Morsbach, Martin; and Johren, Paul. to Goetze AG. Circumferentially resilient piston ring. 4,139,205, Cl. 277-140.000.
Ducret, Jacques; Lacroix, Guy; and Gaulliard, Jean-Michel, to Pepro. Fungicidal compositions based on phosphorous acid esters and salts thereof. 4,139,616, Cl. 424-222.000.
Duderstadt, Gunter: *See—*
Breuer, Friedrich; Brotzmann, Karl; Duderstadt, Gunter; Fichte, Rudolf; and Stadler, Fritz, 4,139,370, Cl. 75-60.000.
Duff, Edward J.: *See—*
Tomlinson, Kenneth; and Duff, Edward J., 4,139,599, Cl. 423-308.000.
Dugan, William P., to General Dynamics Corporation. Method of making circuitry with bump contacts. 4,139,434, Cl. 204-129.350.
Dunbar, Joseph E.; and Begin, Louis E., to Dow Chemical Company, The. Pyrazolopyrimidines. 4,139,705, Cl. 544-280.000.
Duncan, Farris N.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,139,146, Cl. 229-32.000.
Duncan, Robert L., Jr.: *See—*
Boswell, Robert F., Jr.; and Duncan, Robert L., Jr., 4,139,620, Cl. 424-248.570.
Dunlap, Dorsey S. Tire balancing compound. 4,139,395, Cl. 106-157.000.
Dunlap, Richard P.: *See—*
Chasman, Richard A.; Dunlap, Richard P.; and Hinshaw, Jerald C., 4,139,379, Cl. 96-3.000.
Du Pont de Nemours, E. I., and Company: *See—*
Billingsley, John G. S., 4,139,309, Cl. 366-186.000.
Dean, Albert J.; and Ross, Francis J., 4,139,428, Cl. 204-68.000.
Drewes, Harold R., 4,139,710, Cl. 548-359.000.

Hayek, Mason; Robbins, Gordon B.; and Yeaton, Oliver, 4,139,477, Cl. 252-8.800.
Payne, Donald H., 4,139,349, Cl. 44-68.000.
Pruckmayr, Gerfried, 4,139,567, Cl. 568-613.000.
Wolf, Anthony D., 4,139,364, Cl. 71-92.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxypyridyl substituted alkanes. 4,139,624, Cl. 424-263.000.

Dybas, Richard A.: *See—*
Grier, Nathaniel; Dybas, Richard A.; and Strelitz, Robert A., 4,139,559, Cl. 260-563.00P.

Dybel, Frank R. System for continuously monitoring compression and tension loads on force carrying member. 4,138,898, Cl. 73-767.000.

Dychkin, Mikhail M.: *See—*
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Dychkin, Mikhail M., 4,139,105, Cl. 214-8.50D.

Dyck, Arthur, to International Audio Visual, Inc. Parallel-feed tape spooling apparatus for concurrent winding of magnetic tape onto a plurality of spools of the type used in endless tape cartridges. 4,139,165, Cl. 242-56.900.

Dyer, Don L.: *See—*
Graves, Phillip H.; and Dyer, Don L., 4,138,891, Cl. 73-421.50R.

Dykstra, Edward G., to Ethox Corporation. Sterility guard for piercing devices, connectors and needles. 4,139,010, Cl. 128-221.000.

Dynamics Corporation of America: *See—*
Lewison, Howard L., 4,139,065, Cl. 172-400.000.

E-Systems, Inc.: *See—*
Roberts, Charles E., 4,139,841, Cl. 340-373.000.

Eastern Company, The: *See—*
Pelcin, Albert L., 4,138,869, Cl. 70-151.00R.

Eastman Kodak Company: *See—*
Blair, Gerald E.; Shafer, John H.; Meyers, John J.; and Smith, Frank T. J., 4,139,677, Cl. 428-409.000.
Chasman, Richard A.; Dunlap, Richard P.; and Hinshaw, Jerald C., 4,139,379, Cl. 96-3.000.
Hinshaw, Jerald C.; and Henzel, Richard P., 4,139,389, Cl. 96-73.000.
Rauner, Frederick J.; Cunningham, Michael P.; and Van Hanehem, Richard C., 4,139,390, Cl. 96-91.00N.

Ebauches S.A.: *See—*
Laesser, Claude; Viennet, Rene; and Gharadjedaghi, Fereydoun, 4,139,272, Cl. 350-337.000.
Laesser, Claude; Viennet, Rene; and Portmann, Hubert, 4,139,279, Cl. 350-334.000.
Michel, Jean-Georges, 4,139,793, Cl. 310-353.000.

Ebbesmeyer, Steven R.: *See—*
Taylor, Charles W.; Lasater, Donald A.; and Ebbesmeyer, Steven R., 4,139,032, Cl. 141-206.000.

Ebenhoech, Franz L.: *See—*
Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, 4,139,351, Cl. 55-97.000.

Eckhart, Thomas D.; Nelson, Richard L.; and Hoglan, Jack M., to Eckhart, Thomas D. Anatomy testing and measuring device. 4,138,999, Cl. 128-2.00V.

Eckles, William E.; and Willis, William J., to R. O. Hull & Company, Inc. Composition, plating bath, and method for electroplating tin and/or lead. 4,139,425, Cl. 204-43.00S.

Edge, Barry N.: *See—*
Eschenbach, Paul W.; Satterfield, Larry S.; McKinney, David B.; and Edge, Barry N., 4,138,764, Cl. 15-320.000.

Edinburg State Bank: *See—*
Schlemmer, Alfred H., 4,138,854, Cl. 62-62.000.

Edmond, James J.: *See—*
Ruoff, Carl F., Jr.; and Edmond, James J., 4,138,884, Cl. 73-133.00R.

Edwards, Roy E., to Girling Limited. Disc brake structure permitting quick change of friction pads. 4,139,082, Cl. 188-73.600.

Ehrat, Kurt, to Gretag Aktiengesellschaft. Method of assessing a printed article. 4,139,779, Cl. 250-556.000.

Eisai Co., Ltd.: *See—*
Hirose, Noriyasu; and Kuriyama, Shizuo, 4,139,632, Cl. 424-247.000.

Eisenberg, Robert M.; and Quick, George R., to Singer Company, The. Device for multiplexing video signals. 4,139,868, Cl. 360-33.000.

Elbert, Richard A. Back support truck seat back. 4,139,235, Cl. 297-284.000.

Electro-Ty, Inc.: *See—*
Barrette, Richard P.; Glode, John B., Jr.; and Olsen, Richard P., 4,138,770, Cl. 24-16.0PB.

Elemac S.p.A.: *See—*
Bocca, Giuseppe; Mostura, Tiziano; and Valli, Bruno, 4,138,912, Cl. 83-69.000.

Elkins, William; and Williams, Bill A., to Acurex Corporation. Liquid cooled helmet. 4,138,743, Cl. 2-171.200.

Emhart Industries, Inc.: *See—*
Poirier, Armand C., 4,138,870, Cl. 70-372.000.

EMI Limited: *See—*
Williams, Anthony M., 4,139,775, Cl. 250-445.00T.

Endo, Hirohido: *See—*
Inose, Fumiyuki; Endo, Hirohido; and Komatsu, Akio, 4,139,838, Cl. 340-703.000.

Endo, Katutoshi: *See—*
Matsuo, Minoru; and Endo, Katutoshi, 4,139,380, Cl. 96-1.50R.

Engel, Alexander: *See—*
United States of America, National Aeronautics and Space Administration; Engel, Alexander; and Springer, L. Richard, 4,139,839, Cl. 340-347.0DD.

Engeler, William E., to General Electric Company. Single phase signal processing system utilizing charge transfer devices. 4,139,783, Cl. 307-221.00D.

Engelhard Minerals & Chemicals Corporation: *See—*
Schroeder, Manfred F.; Biondo, Joseph G.; and Aliotta, Joseph, 4,139,030, Cl. 141-98.000.

Engholdt, Richard K., to Erie Manufacturing Company. Electronic reversible motor operated valve assembly. 4,139,153, Cl. 236-78.00C.

English, Francis G. S. Dust removing methods and apparatus. 4,139,201, Cl. 274-47.000.

Entin, Max A.: *See—*
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.

Entreprise d'Equipments Mecaniques et Hydrauliques E.M.H.: *See—*
Tuson, Samuel, 4,139,322, Cl. 405-169.000.

Enzo Bio Chem Incorporated: *See—*
Rabbani, Elazar S., 4,139,346, Cl. 422-56.000.

Erect Pro, Inc.: *See—*
Parker, Ernest P., 4,139,118, Cl. 220-316.000.

Erickson, Arnold R.; and Panzera, Carlino, to Brunswick Corporation. Abradable seal material and composition thereof. 4,139,376, Cl. 75-229.000.

Erie Manufacturing Company. *See—*
Engholdt, Richard K., 4,139,153, Cl. 236-78.00C.

Eriksen, Leif H.: *See—*
Fritzvold, Bjorn H.; Lynghjem, Arne; Johnsen, Oystein; and Eriksen, Leif H., 4,139,467, Cl. 210-97.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Linear motion ball bearing. 4,139,242, Cl. 308-6.00C.

Eschenbach, Paul W.; Satterfield, Larry S.; McKinney, David B.; and Edge, Barry N., to Milliken Research Corporation. Device for scrubbing surfaces. 4,138,764, Cl. 15-320.000.

Esnoult, Marc; and Ayme-Jouve, Michel, to Societe Europeenne des Produits Refractaires. Linings for pusher ovens. 4,139,394, Cl. 106-57.000.

Espenschied, Helmut, to Robert Bosch GmbH. Engine ignition system with electromagnet control of enclosed distributor gaps. 4,138,983, Cl. 123-148.0DK.

Essex Group, Inc.: *See—*
Turner, Jesse H.; and Raymer, Jack D., 4,139,355, Cl. 62-324.000.

Establissements Francois Salomon et Fils: *See—*
Salomon, Georges P. J., 4,139,211, Cl. 280-618.000.

Estaque, Andre F., to Societe Anonyme Automobiles Citroen. Speed change device. 4,138,900, Cl. 74-199.000.

Etablissement Dentaire Ivoclar: *See—*
Pfaffenbauer, Ludwig, 4,139,341, Cl. 432-184.000.

Etablissements Bouvry: *See—*
Hesnault, Raymond, 4,138,966, Cl. 119-29.000.

Ethox Corporation: *See—*
Dykstra, Edward G., 4,139,010, Cl. 128-221.000.

Ethyl Products Company: *See—*
Hupperich, Peter J., 4,139,161, Cl. 241-162.000.

Etnaer, Alexandr I.: *See—*
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.

Etzold, Roland. Method and apparatus for flattening wood based panels. 4,139,407, Cl. 156-209.000.

Euteco S.p.A.: *See—*
Pellizzon, Tullio; Piccolo, Luigi; and Schwarz, Peter, 4,139,398, Cl. 106-304.000.

Ewald, Ronald F., to Seaquist Valve Co., a Division of Pittway Corporation. Variable spray valve assembly. 4,139,128, Cl. 222-402.170.

Ewe, Kurt: *See—*
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, 4,139,328, Cl. 415-1.000.

Exxon Production Research Company: *See—*
Maple, James A.; and Jacobson, Conrad E., 4,139,142, Cl. 228-175.000.
Muecke, Thomas W.; Cooke, Claude E., Jr.; and Gruesbeck, Clay, Jr., 4,139,060, Cl. 166-281.000.

Exxon Research & Engineering Co.: *See—*
Gardiner, John B.; and Kuntz, Irving, 4,139,480, Cl. 252-51.50A.
Jacobson, Allan J.; and Whittingham, M. Stanley, 4,139,682, Cl. 429-218.000.
Jahan, Christian C.; and Bouvin, Jacques, 4,138,855, Cl. 62-112.000.
Klemann, Lawrence P.; Newman, Gerald H.; and Stogryn, Eugene L., 4,139,681, Cl. 429-191.000.
Maple, James A.; and Jacobson, Conrad E., 4,139,142, Cl. 228-175.000.
Thaler, Warren A.; Buckley, Donald J.; and Kennedy, Joseph P., 4,139,695, Cl. 526-308.000.

Eymard, Pierre: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; Eymard, Pierre; Werbenec, Jean-Pierre; and Broll, Madeleine, 4,139,634, Cl. 424-274.000.

F. L. Smithe Machine Company, Inc.: *See—*
Helm, Herbert W., 4,138,933, Cl. 93-61.00R.

F. lli Marzoli & C. S.p.A.: *See*—
Marzoli, Angelo, 4,138,778, Cl. 29-235.000.
Fa, Charles H.: *See*—
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,139,401, Cl. 148-175.000.
Fabrique d'Horlogerie la Vedette, S.A.: *See*—
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Fabula, Joseph J.: *See*—
Cohen, Seymour H.; and Fabula, Joseph J., 4,139,658, Cl. 427-93.000.
Faccou, Armand L.; and Gibbons, Harold M., to FMC Corporation. Swivel joint sealing system. 4,139,220, Cl. 285-13.000.
Fafard, George E. Slug rejector. 4,139,086, Cl. 194-97.00A.
Fairchild Camera and Instrument Corporation: *See*—
Amelio, Gilbert F., 4,139,787, Cl. 307-264.000.
Fairchild, Martha S., trustee: *See*—
Fairchild, William A., Jr., 4,139,132, Cl. 224-25.00A.
Fairchild, William A., Jr., to Fairchild, Martha S., trustee. Backpack levers. 4,139,132, Cl. 224-25.00A.
Falciani, Marco: *See*—
Broggi, Renato; and Falciani, Marco, 4,139,702, Cl. 544-27.000.
Falk, Mervin L.: *See*—
Ganske, Kingston E.; and Falk, Mervin L., 4,139,901, Cl. 364-900.000.
Falkenberg, Werner, to BM-Elektronik Meletzky KG. Electro acoustic transducer with improved diaphragm. 4,139,733, Cl. 179-1.00F.
Farnbach, William A.: *See*—
Morrill, Justin S., Jr.; Farnbach, William A.; and Small, Charles T., 4,139,903, Cl. 364-900.000.
Faron, Robert; and Cathala, Annie, to Produits Chimiques Ugine Kuhlmann. Electrolyzer for industrial production of fluorine. 4,139,447, Cl. 204-239.000.
Farrell, Guy M.; Gaber, Martin; and Spedale, Joseph J., to Chicago Switch, Inc. Slide switch constructions. 4,139,746, Cl. 200-16.00D.
Fecker, Josef; and Memminger, Gustav, to Gustav Memminger-Verfanrenstechnik fur die Maschenindustrie, Firma. Yarn delivery apparatus, especially for knitting machines. 4,138,866, Cl. 66-132.00R.
Fedders Corporation: *See*—
LaPorte, Gerald E.; Osterkorn, Charles L.; and Marino, Salvatore M., 4,138,997, Cl. 126-271.000.
Fehlmann, Hans-Beat, to Loewe Anstalt. Composite panel material with metal skeleton. 4,139,670, Cl. 428-167.000.
Feingold, Mitchell L.: *See*—
Glusker, Peter D.; Fontana, Walter C.; and Feingold, Mitchell L., 4,139,130, Cl. 224-5.00W.
Felber, David P.; and Burrello, Daniel M. Kick training aid for karate. 4,139,193, Cl. 272-146.000.
Feld, Gerald M., to Trend Products Company. Vegetable steamer. 4,138,939, Cl. 99-418.000.
Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica S.p.A. Water-soluble, non-ionizing, radiopaque compounds and contrast compositions containing the same. 4,139,605, Cl. 424-5.000.
Fellows, Richard R., Jr.: *See*—
Penrod, Orville R.; and Fellows, Richard R., Jr., 4,139,726, Cl. 174-52.0FP.
Fenco Corporation: *See*—
Chiodini, Fernando, 4,138,794, Cl. 43-43.140.
Fenelon, Georges: *See*—
Guitard, Laurent; and Fenelon, Georges, 4,139,215, Cl. 280-744.000.
Ferag AG: *See*—
Pomey, Rene, 4,139,765, Cl. 235-92.0SB.
Ferrante, Jose. Liquid dispensing container. 4,139,124, Cl. 222-110.000.
Ferranti Limited: *See*—
Clarke, Graham M., 4,139,307, Cl. 356-446.000.
Fewer, William R.: *See*—
Jones, Addison B.; and Fewer, William R., 4,139,051, Cl. 165-1.000.
Fey, Maurice G.; Harvey, Francis J., II; and McDonald, Jack, to Westinghouse Electric Corp. Arc heater production of silicon involving alkali or alkaline-earth metals. 4,139,438, Cl. 204-164.000.
Fichte, Rudolf: *See*—
Breuer, Friedrich; Brotzmann, Karl; Duderstadt, Gunter; Fichte, Rudolf; and Stadler, Fritz, 4,139,370, Cl. 75-60.000.
Field, David D.; Porter, Bill R.; and Porter, George D., to Porter Manufacturing Corporation. Recirculating sprayer. 4,139,156, Cl. 239-121.000.
Fincham, Lawrence R., to KEF Electronics Limited. Pivoted loudspeaker enclosure with visual indicator of optimum listening position. 4,139,734, Cl. 179-1.00E.
Finder, Kenneth A.: *See*—
Ashdown, Glynn R.; Smith, Gary R.; and Finder, Kenneth A., 4,139,745, Cl. 179-175.30F.
Finger, Eugene P., to Curtis Instruments, Inc. Method and apparatus for producing nonlinear integral functions. 4,139,896, Cl. 364-829.000
Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel F.; Hall, James E.; and Schulz, Donald N., 4,139,490, Cl. 252-431.00L.
Lohr, Delmar F., Jr.; Koch, Russell W.; and Schulz, Donald N., 4,139,523, Cl. 260-45.75W.
Fischer Gesellschaft m.b.H.: *See*—
Fischer, Josef, 4,139,194, Cl. 273-73.00C.
Fischer, Josef, to Fischer Gesellschaft m.b.H. Racket for striking a ball. 4,139,194, Cl. 273-73.00C.
Fishwick, Brian R.; and Quayle, Arthur, to Imperial Chemical Industries Limited. Water-insoluble monoazo dyestuffs which is a diazotized 6-cyano-2:4-dinitroaniline coupled to a m-acylamino-substituted aniline. 4,139,528, Cl. 260-207.100.
Fleck Industries, Inc.: *See*—
Graham, Andrew S., Jr., 4,139,113, Cl. 217-12.00R.
Fletcher Sutcliffe Wild Limited: *See*—
Bower, Lewis R.; and Wake, Malcolm, 4,139,325, Cl. 405-291.000.
Bower, Lewis R.; and Wake, Malcolm, 4,139,326, Cl. 405-292.000.
Floyd, Roger M.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,139,146, Cl. 229-32.000.
Flygstad, Dean W., to Telex Communications, Inc. Headset. 4,139,743, Cl. 179-156.00A.
FMC Corporation: *See*—
Faccou, Armand L.; and Gibbons, Harold M., 4,139,220, Cl. 285-13.000.
Hafner, Eugene R., 4,139,317, Cl. 403-352.000.
Pelta, Edmond R., 4,138,825, Cl. 33-228.000.
Foerster, Hubert, to Robert Bosch GmbH. Method for fast- and slow-motion reproduction of video signals stored in a succession of parallel tracks on a record medium. 4,139,867, Cl. 360-10.000.
Foley, James W.: *See*—
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,139,381, Cl. 96-3.000.
Borror, Alan L.; Foley, James W.; and Lee, John W., Jr., 4,139,704, Cl. 544-135.000.
Fontana, Walter C.: *See*—
Glusker, Peter D.; Fontana, Walter C.; and Feingold, Mitchell L., 4,139,130, Cl. 224-5.00W.
Ford Aerospace & Communications Corporation: *See*—
McCrum, Eugene F.; Tomita, William K.; Myers, James G.; and Rehak, John T., 4,139,769, Cl. 250-341.000.
Forhaltz, Howard A.; and Sickler, Kenneth H., to General Electric Company. Gear and boss protector. 4,138,899, Cl. 74-100.00R.
Formfac International AB: *See*—
Svensson, Algot I., 4,139,316, Cl. 403-172.000.
Fortin, Raymond; and Peroy, Francois, to Regie Nationale des Usines Renault. Speed reducer, particularly for driving a propeller. 4,138,901, Cl. 74-219.000.
Foti, Dominick. Sewage treatment unit. 4,139,471, Cl. 210-170.000.
Fourcin, Adrian J., to Larynogograph Limited. Apparatus for speech pattern derivation. 4,139,732, Cl. 179-1.0AL.
Fowler, Donald W.: *See*—
Bresie, Don A.; and Fowler, Donald W., 4,139,019, Cl. 137-351.000.
Franke, Robert H., to Burroughs Corporation. Asynchronous digital circuit testing and diagnosing system. 4,139,147, Cl. 235-302.000.
Franklin, Barbara. Method of testing human auditory responses. 4,139,730, Cl. 179-1.00N.
Franssen, Johannes P. T.: *See*—
Jacobs, Jacobus H.; Van Esdonk, Johannes; and Franssen, Johannes P. T., 4,139,250, Cl. 316-19.000.
Fraschini, Mario, to Laboratorio Farmacologico Milanese S.n.c. Ready-reading, liquid-crystal-display thermometer. 4,138,889, Cl. 73-356.000.
Freeman, Maurice A.: *See*—
Urich, Robert H.; and Freeman, Maurice A., 4,139,822, Cl. 324-219.000.
Freeman, Willie B.: *See*—
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,139,753, Cl. 200-148.00A.
Freyberger, Laurin C.: *See*—
Micic, Ljubomir; Schat, Hermannus; Freyberger, Laurin C.; and Ullrich, Manfred F., 4,139,860, Cl. 358-22.000.
Friedrich, Heinz: *See*—
Beschke, Helmut; Friedrich, Heinz; Muller, Klaus-Peter; and Schreyer, Gerd, 4,139,536, Cl. 546-317.000.
Friesem, Albert A.: *See*—
Reich, Shymon; and Friesem, Albert A., 4,139,388, Cl. 96-67.000.
Fritz, Alton L. Materials handling apparatus. 4,139,111, Cl. 214-674.000.
Fritzvold, Bjorn H.; Lynghjem, Arne; Johnsen, Oystein; and Eriksen, Leif H., to Myrens Verksted A/S. Disc press for continuous pressing of aqueous or suspended pulp. 4,139,467, Cl. 210-97.000.
Fromman, Arthur R. A. Firebox with movable hood or hood sections. 4,138,987, Cl. 126-120.000.
Frost, Richard B.; Juhasz, Joseph L.; and Wing, Barry W., to Unisearch Limited. Navigational aid. 4,138,817, Cl. 33-1.0SD.
Fuji Photo Film Co., Ltd.: *See*—
Ikeda, Tomoaki; Misu, Hiroshi; Aotani, Yoshinasa; and Shinozaki, Fumiaki, 4,139,391, Cl. 96-115.00R.
Iwasaki, Masayuki; Misu, Hiroshi; and Miyano, Shizuo, 4,139,384, Cl. 96-33.000.
Fujii, Noriomi, to Kewpie Kabushiki Kaisha. Apparatus for removing calyxes and the like from fruits. 4,138,940, Cl. 99-636.000.
Fujii, Yasuhiko: *See*—
Haramoto, Yutaka; Fujii, Yasuhiko; and Yamazaki, Masami, 4,139,728, Cl. 179-1.00G.
Fujikawa, Tetsuzo; and Takada, Toshiyuki, to Kawasaki Jukogyo Kabushiki Kaisha. Crankchamber precompression type two-cycle internal combustion engines. 4,138,971, Cl. 123-59.0BS.
Fujimura, Fumio: *See*—
Nagai, Koichi; Ishikawa, Ryuji; Imamura, Koichi; Fujimura, Fumio; and Shiokoshi, Youhei, 4,139,675, Cl. 428-349.000.
Fujita, Haruyasu, to Honda GikenKogyo Kabushiki Kaisha. Automobile service and inspection time indicating device. 4,138,964, Cl. 116-62.400.
Fujita, Nobuhiko; and Saito, Hiroshi. Audible alarm unit. 4,139,842, Cl. 340-384.00E.

Fujitsu Limited: *See*—
Kurahashi, Keizo; Shimizu, Michihiro; Andoh, Shizuo; and Yoshikawa, Kazuo, 4,139,803, Cl. 340-707.000.
Fukuda, Katsutake: *See*—
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Fukuda, Takashi: *See*—
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Fulkerson, David E., to Honeywell Inc. Logic gate circuits. 4,139,781, Cl. 307-213.000.
Furst, Andor; Gutzwiller, Jurg A. W.; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, to Hoffmann-La Roche Inc. 19-Nor-D-homopregnanes. 4,139,716, Cl. 560-257.000.
Furst, Wilhelm: *See*—
Postler, Gunter; Furst, Wilhelm; Liebl, Norbert; and Rudenauer, Werner, 4,138,946, Cl. 102-210.000.
Furukawa, Itsuro: *See*—
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Futaba Denshi Kogyo Kabushiki Kaisha: *See*—
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, 4,139,857, Cl. 357-15.000.
Futurecraft Corporation: *See*—
Giles, Dean G., 4,139,354, Cl. 55-387.000.
G. D. Searle & Co.: *See*—
Hermann, William G.; Martin, Manuel I.; and Meyer, Rolf, 4,138,931, Cl. 92-87.000.
G. L. Rexroth GmbH: *See*—
Wusthof, Peter; and Schneider, Johann, 4,139,335, Cl. 418-61.00B.
Gaber, Martin: *See*—
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GAF Corporation: *See*—
Dixon, Kenneth W., 4,139,688, Cl. 526-41.000.
Gajski, Daniel D.: *See*—
Tulpule, Bhalchandra R.; and Gajski, Daniel D., 4,139,899, Cl. 364-900.000.
Gakh, Igor G.: *See*—
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G., 4,139,557, Cl. 260-561.00R.
Galanis, Tom L.: *See*—
Yerkes, Ronald W.; Hoffner, Joel L.; Galanis, Tom L.; and Hostetter, Richard S., Jr., 4,139,890, Cl. 364-472.000.
Gallizia, Achille, to Industrie Pirelli, S.p.A. Process for injection molding a vehicle tire tread. 4,139,592, Cl. 264-279.000.
Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,139,624, Cl. 424-263.000.
Gano, John C., to Otis Engineering Corporation. Hydraulic stop and orienting tool for well system installation. 4,139,058, Cl. 166-85.000.
Ganske, Kingston E.; and Falk, Mervin L., to Teknekron, Inc. Document storage and retrieval system. 4,139,901, Cl. 364-900.000.
Garden City Envelope Company: *See*—
Palkovic, Victor, 4,138,934, Cl. 93-63.00R.
Gardiner, John B.; and Kuntz, Irving, to Exxon Research & Engineering Co. Multifunctional alternating interpolymer lubricating oil additive. 4,139,480, Cl. 252-51.50A.
Gardner, Derek V.; and Goudie, Alexander C., to Beecham Group Limited. N-(4-substituted-3,5-dichloro-phenyl)-piperazines. 4,139,621, Cl. 424-250.000.
Gardner, Keith L.; and Adaniya, Henry N., to United States of America, Navy. Fast two dimensional fourier transform device. 4,139,897, Cl. 364-827.000.
Garner, Herman H., to Vortox Company. Air cleaner. 4,139,353, Cl. 55-253.000.
Garrett, Kenneth M., to Albright & Wilson Limited. Mixed tri-aryl (phenyl and alkylphenyl) phosphate esters. 4,139,487, Cl. 252-182.000.
Garrison, Stephen N., to Dresser Industries, Inc. Labyrinth type rotary seal with intermittent feature of contact type seal. 4,139,203, Cl. 277-56.000.
Garrod, John F.: *See*—
Copping, Leonard G.; and Garrod, John F., 4,139,365, Cl. 71-92.000.
Garron, Stephen A., to Singer Company, The. Stitch length control for electronic sewing machine. 4,138,955, Cl. 112-158.00E.
Gasson, Roy A., to Redifon Flight Simulation Ltd. Method of forming articles from thermoplastics sheet by free-blowing. 4,139,586, Cl. 264-544.000.
Gastrock, Edward A., to Stewart, Charles L.; and Gastrock Protein Corporation. Process for treating cottonseed meats. 4,139,646, Cl. 426-430.000.
Gastrock Protein Corporation: *See*—
Gastrock, Edward A., 4,139,646, Cl. 426-430.000.
Gaulliard, Jean-Michel: *See*—
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GCA Corporation: *See*—
Sipos, Laszlo, 4,139,333, Cl. 417-63.000.
Geary, Kermit E.: *See*—
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Gehman, Stacy E.: *See*—
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Gemmel, Goran: *See*—
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General Company Limited: *See*—
Tanaka, Atsuyuki, 4,139,898, Cl. 364-900.000.
General Dynamics Corporation: *See*—
Dugan, William P., 4,139,434, Cl. 204-129.350.
General Electric Company: *See*—
Adorjan, Alexander S., 4,139,024, Cl. 138-149.000.
Baumann, Frederick W.; and Kaczkowski, Bernard C., 4,139,049, Cl. 164-292.000.
Campbell, John R., 4,139,721, Cl. 568-641.000.
Cooper, Glenn D.; and Katchman, Arthur, 4,139,574, Cl. 260-836.000.
Crivello, James V., 4,139,385, Cl. 96-35.100.
Engeler, William E., 4,139,783, Cl. 307-221.00D.
Forhaltz, Howard A.; and Sickler, Kenneth H., 4,138,899, Cl. 74-100.00R.
Kelly, Peter B.; and Pucci, Donald G., 4,139,671, Cl. 428-211.000.
Malm, Robert N.; and Cox, Charles W., 4,139,794, Cl. 313-220.000.
Norton, James F., 4,139,306, Cl. 358-106.000.
Pensabene, Saverio F.; and Catotti, Arthur J., 4,139,423, Cl. 204-2.100.
Pietsch, Joseph A., 4,138,859, Cl. 62-324.000.
Roy, Prodyot; and Licina, George J., 4,139,421, Cl. 204-1.00T.
Sannes, Keith N., 4,139,687, Cl. 526-1.000.
Smith, William E., 4,139,542, Cl. 260-347.800.
Thompson, Richard L., 4,139,884, Cl. 362-430.000.
Tsen, John B.; and Reel, David A., 4,139,756, Cl. 200-330.000.
Urich, Robert H.; and Freeman, Maurice A., 4,139,822, Cl. 324-219.000.
Ward, William J., III, 4,139,668, Cl. 428-138.000.
General Foods Corporation: *See*—
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General Mills Chemicals, Inc.: *See*—
Rogols, Saul; and Salter, John W., 4,139,505, Cl. 260-9.000.
General Motors Corporation: *See*—
Thornburgh, William F., 4,139,151, Cl. 236-48.00R.
Gentile, Charles J., to Orange Products, Inc. Plunger-type dispenser with ratchet actuator. 4,139,127, Cl. 222-390.000.
Gentile, Patrick J., to Vamco Machine and Tool, Inc. Punch press feeding apparatus. 4,138,913, Cl. 83-236.000.
Georgii-Kobold August Heine KG: *See*—
Ortlieb, Wolfgang; and Grossmann, Friedrich, 4,139,831, Cl. 338-128.000.
Geosling, Christine E.: *See*—
Manuccia, Thomas J.; and Geosling, Christine E., 4,139,439, Cl. 204-164.000.
Geraci, James S. Ice bagging device. 4,139,029, Cl. 141-98.000.
Gerber, Arthur H.: *See*—
Reynard, Kennard A.; and Gerber, Arthur H., 4,139,598, Cl. 423-300.000.
Gerry, Martin E. Transient modulated ignition system. 4,139,804, Cl. 315-209.00R.
Gerzon, Michael A., to National Research Development Corporation. Sound reproduction system with matrixing of power amplifier outputs. 4,139,729, Cl. 179-1.0GQ.
Gesellschaft fur Elektrometallurgie mbH: *See*—
Breuer, Friedrich; Brotzmann, Karl; Duderstadt, Gunter; Fichte, Rudolf; and Stadler, Fritz, 4,139,370, Cl. 75-60.000.
Gharadjedaghi, Fereydoun: *See*—
Laesser, Claude; Viennet, Rene; and Gharadjedaghi, Fereydoun, 4,139,272, Cl. 350-337.000.
Ghekiere, Jean-Pierre A.; and Peeters, Hugo K., to AGFA-GEVAERT N.V. Laserbeam recording. 4,139,853, Cl. 346-1.000.
Ghelli, Giovanni, to Luigi Stappani di P. Stappani & C. Method for decontaminating waste material from chromium mineral processing by wet treatment with sulphur. 4,139,460, Cl. 210-45.000.
Ghiringhelli, Hugh A.; and Deffeyes, Kenneth S. Process for electrochemically recovering precious metals from ores. 4,139,432, Cl. 204-110.000.
Giacomotti, Richard A.: *See*—
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Petrini, Julian L.; Petrini, Madeline A.; Giacomotti, Richard A.; Giacomotti, Sally A.; and Slater, Ted L., 4,139,764, Cl. 235-92.0GA.
Gibbons, Harold M.: *See*—
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Giles, Dean G., to Futurecraft Corporation. Filter for the removal of particulate and vaporous mercury. 4,139,354, Cl. 55-387.000.
Gillette Company, The: *See—*
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Girling Limited: *See—*
Edwards, Roy E., 4,139,082, Cl. 188-73.600.
Girodin, Mario. Rotor for a helicopter. 4,139,331, Cl. 416-114.000.
Giroud, Gerard. Rail for center-flange wheels. 4,139,154, Cl. 238-136.000.
Giuggio, Nicholas; and Noyes, Richard C., to Combustion Engineering, Inc. Scram device having a multiplicity of neutron absorbing masses. 4,139,414, Cl. 176-86.00R.
Givas, Joan K.: *See—*
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Glancy, John J.: *See—*
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Glaser, Josef; Koch, Karl H.; and Kurth, Johannes, to Mannesmann Aktiengesellschaft. Control of discharge outlet of a casting vessel. 4,139,050, Cl. 164-437.000.
Glavno Upravlenie Rastenievadstvo pri MZHP: *See—*
Anadoliev, Georgi S., 4,138,801, Cl. 47-58.000.
Glennon, Timothy F.: *See—*
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Glode, John B., Jr.: *See—*
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Glory Kogyo Kabushiki Kaisha: *See—*
Nobuhiro, Iizuka, 4,138,834, Cl. 53-212.000.
Glusker, Peter D.; Fontana, Walter C.; and Feingold, Mitchell L. Canteen belt. 4,139,130, Cl. 224-5.00W.
Gnahn, Gunter: *See—*
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Goddard, Terrence P.; and Thatcher, Donald N., to Teledyne McCormick Selph. Active binder propellants incorporating burning rate catalysts. 4,139,404, Cl. 149-19.200.
Goebel, Irmhild: *See—*
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Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., to Procter & Gamble Company, The. Textile treating composition. 4,139,479, Cl. 252-8.800.
Gonzalez, Harry, Jr. Bandage apparatus for treating burns. 4,139,004, Cl. 128-82.100.
Goodney, Thomas O.; Johannsen, Donald O.; and Kubesheski, John T., to Deere & Company. Hydraulic tilt and pitch control for dozer blade. 4,139,066, Cl. 172-803.000.
Goodyear Tire & Rubber Company, The: *See—*
Alfio, Deregibus, 4,139,164, Cl. 242-56.400.
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Gorny, Rolf D., to U.S. Philips Corporation. Current collector with a protective screen. 4,139,252, Cl. 339-22.00B.
Goto, Nobutaka; and Naito, Michiru, to Chlorine Engineers Corp., Ltd. Electrolytic cell for producing alkali metal hypochlorites. 4,139,449, Cl. 204-270.000.
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Goudie, Alexander C.: *See—*
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Gould Inc.: *See—*
Kirsch, Thomas S., 4,139,833, Cl. 338-308.000.
Grace Development Company: *See—*
Warden, Fuller; and Lewis, Eugene W., 4,138,816, Cl. 32-60.000.
Graham, Andrew S., Jr., to Fleck Industries, Inc. Panel fastening device. 4,139,113, Cl. 217-12.00R.
Graham, Kenneth A.: *See—*
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Grant, Ralph M.: *See—*
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Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., to Standard Oil Company, The. Production of unsaturated nitriles. 4,139,552, Cl. 260-465.300.
Grather, Gunter; and Rabus, Friedrich, to Robert Bosch GmbH. Ignition system for internal combustion engine. 4,138,977, Cl. 123-117.00R.
Graupe, Milton M.: *See—*
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Graversen, Niels P. G.; and Porland, John, to Danfoss A/S. Slide valve. 4,139,150, Cl. 236-1.00B.
Graves, Phillip H.; and Dyer, Don L. Sampling of toxic gases from oil and/or gas wells. 4,138,891, Cl. 73-421.50R.
Green, Alan C., to Lucas Industries Ltd. Fuel injection pumping apparatus for internal combustion engines. 4,138,981, Cl. 123-139.0AQ.
Greenspan, Alice H. Puppet for clothing pocket. 4,138,745, Cl. 2-247.000.
Greenway, John M.; and Shaw, Frederick W., to Imperial Chemical Industries Limited. Heat transfer. 4,138,840, Cl. 57-289.000.
Greif, Donald S.: *See—*
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Greinacher, Ekkehard, to Th. Goldschmidt AG. Europium chloride enrichment process. 4,139,427, Cl. 204-64.00R.
Gretag Aktiengesellschaft: *See—*
Ehrat, Kurt, 4,139,779, Cl. 250-556.000.
Greten, Berndt, to bison-werke Bahre & Greten GmbH & Co. KG. Gluing machine for gluing lignocellulose-containing particles used for producing pressed wood plates. 4,139,308, Cl. 366-147.000.
Gribens, Joel A.: *See—*
Simons, Charles W.; O'Neill, Gerald J.; and Gribens, Joel A., 4,139,607, Cl. 424-45.000.
Grier, Nathaniel; Dybas, Richard A.; and Strelitz, Robert A., to Merck & Co., Inc. Process for preparation of 1-[1,5-di-(3,3-dimethylnorborn-2-yl)-3-pentyl]-1,5,9-triazanonane and novel intermediates. 4,139,559, Cl. 260-563.00P.
Grier, William R.: *See—*
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Griffith, Cecil B.; Thomas, Jerry D.; and Wiktorowski, Thomas A., to Republic Steel Corporation. Gas stirrer. 4,139,184, Cl. 266-220.000.
Griffith, Robert M.; Parkinson, Christopher; and Palmer, Ronald A., to Allied Colloids Limited. Materials and processes for flotation of mineral substances. 4,139,455, Cl. 209-167.000.
Grimes, Larry E. Double grip air chuck. 4,139,207, Cl. 279-4.000.
Groelz, Jay C., to Heinzman Engineering, Inc. System for automatic forward bow alignment on water drive pivot. 4,139,018, Cl. 137-344.000.
Grossmann, Friedrich: *See—*
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Gruesbeck, Clay, Jr.: *See—*
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Grunwell, Joyce F.; and Petrow, Vladimir, to Richardson-Merrell Inc. 19-Oxygenated-androst-5-enes for the enhancement of libido. 4,139,617, Cl. 424-238.000.
GTE Automatic Electric Laboratories, Inc.: *See—*
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GTE Sylvania Incorporated: *See—*
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Gubelmann, Walter S., executor: *See—*
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Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., to R & I Patent Corp. Justifying text writing composing machine. 4,139,310, Cl. 400-4.000.
Gudea, Dumitru D.; Bryant, Thomas L.; and Chan, Wan-On, to Triner Scale and Manufacturing Company. Electronic postage scale. 4,139,892, Cl. 364-567.000.
Gudger, Keith H.: *See—*
Raymond, Joseph H., Jr.; and Gudger, Keith H., 4,139,786, Cl. 307-238.000.
Guerguerian, Rhual L., to Dominion Engineering Works Limited. Journal bearing film control system. 4,139,244, Cl. 308-9.000.
Guertin, Robert W.: *See—*
Wood, Chester W.; and Guertin, Robert W., 4,139,031, Cl. 141-206.000.
Guile, Roy N.: *See—*
Kepler, C. Edward; and Guile, Roy N., 4,138,777, Cl. 29-157.00C.
Guitard, Laurent; and Fenelon, Georges. Automobile safety belt. 4,139,215, Cl. 280-744.000.
Gulf Research & Development Company: *See—*
Beuther, Harold; and Montagna, Angelo A., 4,139,452, Cl. 208-107.000.
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,139,561, Cl. 260-575.000.
Gulf & Western Manufacturing Company: *See—*
Jensen, James W., 4,139,089, Cl. 198-621.000.
Nelsen, Roger J., 4,139,090, Cl. 198-740.000.
Gumprecht, Lee C., to GTE Automatic Electric Laboratories, Inc. Wave solder machine. 4,139,143, Cl. 228-180.00R.
Gupta, Harish C. Fastener driving tool. 4,139,137, Cl. 227-123.000.
Guritz, Kenneth E.; and Guritz, Michael L. Duct junction fitting. 4,139,725, Cl. 174-49.000.
Guritz, Michael L.: *See—*
Guritz, Kenneth E.; and Guritz, Michael L., 4,139,725, Cl. 174-49.000.

Gustav Memminger-Verfanrenstechnik fur die Maschenindustrie, Firma: *See*—
Fecker, Josef; and Memminger, Gustav, 4,138,866, Cl. 66-132.00R.

Gutcho, Sidney; and Givas, Joan K., to Becton, Dickinson and Company. Separation technique for assays. 4,139,604, Cl. 424-1.000.

Gutehoffnungshitte Sterkrade AG: *See*—
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, 4,139,328, Cl. 415-1.000.

Gutridge, Jack E.; and Hallam, Keith J., to Pullman Incorporated. Sleeping compartment upper berth. 4,138,949, Cl. 105-315.000.

Gutzwiller, Jurg A. W.: *See*—
Furst, Andor; Gutzwiller, Jurg A. W.; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,139,716, Cl. 560-257.000.

Hafner, Eugene R., to FMC Corporation. Bearing locking assembly. 4,139,317, Cl. 403-352.000.

Hakodate Seimo Sengu Co., Ltd.: *See*—
Maruyama, Jiro; and Suzuki, Seiji, 4,139,225, Cl. 289-1.500.

Halasa, Adel F.; Hall, James E.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Dehydrocarbyl magnesium and an alkali metal compound catalyst composition for polymerizing conjugated dienes. 4,139,490, Cl. 252-431.00L.

Halcon Research & Development Corp.: *See*—
Rizkalla, Nabil M., 4,139,594, Cl. 423-112.000.

Hall, James E.: *See*—
Halasa, Adel F.; Hall, James E.; and Schulz, Donald N., 4,139,490, Cl. 252-431.00L.

Hallam, Keith J.: *See*—
Gutridge, Jack E.; and Hallam, Keith J., 4,138,949, Cl. 105-315.000.

Halmann, Martin M.; and Lee, Dai-Woon, to Yeda Research and Development Company, Ltd. Nickel selective dioxime-containing polyurethane foams. 4,139,502, Cl. 423-139.000.

Halpern, Meyer, coexecutor: *See*—
Asculai, Samuel S.; Kupferberg, Alfred B., deceased; and Halpern, Meyer, coexecutor, 4,139,630, Cl. 424-283.000.

Hamelin, Gilbert; and Monpetit, Louis, to Societe Anonyme DBA. Control device for carburetor. 4,138,975, Cl. 123-102.000.

Hamil, Ira B. Internal grooving machine. 4,138,927, Cl. 90-24.300.

Hamilton, Louis F., Jr.: *See*—
Hamilton, Louis F., Sr.; and Hamilton, Louis F., Jr., 4,139,017, Cl. 137-343.000.

Hamilton, Louis F., Sr.; and Hamilton, Louis F., Jr. Fluid flow control and mounting thereof. 4,139,017, Cl. 137-343.000.

Hamilton, Richard M.; and Sievert, James A., to Minnesota Mining and Manufacturing Company. Self-retaining receptacle box. 4,139,254, Cl. 339-122.00R.

Hammann, Ingeborg: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,615, Cl. 424-216.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,636, Cl. 424-322.000.

Hancock, Henry. Fire retardant polyolefins. 4,139,476, Cl. 252-8.100.

Handlbauer, Peter: *See*—
David, Loic; and Handlbauer, Peter, 4,139,337, Cl. 425-2.000.

Hanks, Jack G.: *See*—
Wolfe, Jerome K.; Hanks, Jack G.; and Rexroad, James O., 4,139,748, Cl. 200-50.0AA.

Hanning, Robert. Apparatus for the injection-molding and cooling of shaped synthetic-resin bodies. 4,139,177, Cl. 249-66.00C.

Hanson, Donald O.; and Sherk, Fred T., to Phillips Petroleum Company. Solvent extraction of tar sand. 4,139,450, Cl. 208-11.0LE.

Hanson, Harlan B.; and Rock, Frank C., to National Controls, Inc. Dual platform counting scale. 4,139,070, Cl. 177-200.000.

Hanusa, Helmut G., to Textron, Inc. Resilient composite foam cushion. 4,139,187, Cl. 267-145.000.

Harada, Kuniyoshi: *See*—
Yamazaki, Takeo; and Harada, Kuniyoshi, 4,138,765, Cl. 16-110.00R.

Harada, Morio: *See*—
Miyazaki, Yoshimasa; Matsumura, Shigeru; Yamauchi, Takayoshi; Harada, Morio; and Shimizu, Hisatoshi, 4,139,610, Cl. 424-72.000.

Harada, Tatsuzo; and Kobayashi, Torao, to Kioritz Corporation. Guide bar for chain saw. 4,138,813, Cl. 30-387.000.

Haramoto, Yutaka; Fujii, Yasuhiko; and Yamazaki, Masami, to Victor Company of Japan, Ltd. Signal processing circuit. 4,139,728, Cl. 179-1.00G.

Hardman, Harley F.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,139,552, Cl. 260-465.300.

Harmon, Fred L. Apparatus for producing an air and liquid vapor mixture. 4,138,970, Cl. 123-25.00R.

Harnischfeger Corporation: *See*—
Profio, Richard L.; and Borgman, Neil E., 4,139,240, Cl. 305-39.000.

Harris, Jeremy M. Articulated wing ornithopter. 4,139,171, Cl. 244-22.000.

Harrison, Shuyen. Preparative centrifugal chromatography device. 4,139,458, Cl. 210-31.00C.

Hartleben, York: *See*—
Kollensperger, Friedrich-Gero; Hartleben, York; Kretzschmar, Rolf; and Neteler, Bernhard, 4,139,538, Cl. 260-307.00C.

Harvey, Francis J., II: *See*—
Fey, Maurice G.; Harvey, Francis J., II; and McDonald, Jack, 4,139,438, Cl. 204-164.000.

Hasegawa, Takanori: *See*—
Hayama, Noboru; Hasegawa, Takanori; Takehara, Kiyoshi; and Kera, Masakazu, 4,139,759, Cl. 219-216.000.

Hashemi, Mike A.; and Pucci, Gregory P., to Wescom, Inc. Telephone conference system with active analog conference. 4,139,731, Cl. 179-1.0CN.

Hashimoto, Shigetoshi; and Nishiyama, Keisuke, to Mitsui Mining & Smelting Co., Ltd. Polishing apparatus for electrolysis mother plate. 4,138,755, Cl. 15-77.000.

Haskell, Richard E.: *See*—
United States of America, National Aeronautics and Space Administration; and Haskell, Richard E., 4,139,862, Cl. 358-81.000.

Hastings, Donald R., to Nordson Corporation. Electrostatic spray gun with isolating paint conduit. 4,139,155, Cl. 239-708.000.

Hastings, Jerome K.; and Keranen, John J., to Cutler-Hammer, Inc. Snap-in bushing electric switch including a frame with integral back-up elements having panel-engaging ramped riser bars. 4,139,755, Cl. 200-295.000.

Hathaway, Sandra J. Child carrier having enveloping structure and suspension strap. 4,139,131, Cl. 224-6.000.

Hattori, Kiyoshi, to Taisei Kogyo Kabushiki Kaisha. Refrigerating apparatus. 4,139,356, Cl. 62-278.000.

Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, to Nippon Soken, Inc. Electronic ignition timing adjusting system for internal combustion engine. 4,138,982, Cl. 123-148.00E.

Haussermann, Ingo, to Haussermann Lammellen Dr.-Ing. Kurt Haussermann. Device for safeguarding screw connections and other movable parts against accidental loosening. 4,139,038, Cl. 151-30.000.

Haussermann Lammellen Dr.-Ing. Kurt Haussermann: *See*—
Haussermann, Ingo, 4,139,038, Cl. 151-30.000.

Havas, George, to Ajax Magnethermic Corporation. Power control unit for a single phase load with slightly changing impedances. 4,139,723, Cl. 13-26.000.

Haven, Duane A.: *See*—
Ostermeier, Bruce H.; Haven, Duane A.; and Sletmoe, Gordon M., 4,139,800, Cl. 315-13.0ST.

Haven, Robert M. Mine car coupling including safety mechanism. 4,139,103, Cl. 213-75.00B.

Hawker Siddeley Canada Ltd.: *See*—
Chapman, Frederic F., 4,139,034, Cl. 144-172.000.

Hay, Harold L., to Columbia Steel Casting Co., Inc. Breaker bar. 4,139,237, Cl. 299-94.000.

Hayama, Noboru; Hasegawa, Takanori; Takehara, Kiyoshi; and Kera, Masakazu, to Riso Kagaku Corporation. Exposure device for a thermal stencil sheet. 4,139,759, Cl. 219-216.000.

Hayami, Masaaki: *See*—
Yamashita, Akio; and Hayami, Masaaki, 4,139,274, Cl. 350-357.000.

Hayashi, Makoto: *See*—
Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, 4,139,485, Cl. 252-135.000.

Hayashi, Masamichi; and Nakane, Masami, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus with novel exposure slit means. 4,139,297, Cl. 355-8.000.

Hayashi, Shigeyuki; Isobe, Masao; and Yamashita, Tadakazu, to Nippon Oil Company, Ltd. Asphalt compositions. 4,139,511, Cl. 260-28.5AS.

Hayashida, Nariyoshi: *See*—
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.

Hayek, Mason; Robbins, Gordon B.; and Yeaton, Oliver, to Du Pont de Nemours, E. I., and Company. Fabric conditioning compositions. 4,139,477, Cl. 252-8.800.

Hebel, Walter, to Walter Hebel GmbH & Co., Firma. Drawing board. 4,138,818, Cl. 33-76.00R.

Heeres, Jan, to Janssen Pharmaceutica N.V. 2-Aryl-2-halomethyl-4-alkenyl-1,3-dioxolanes. 4,139,540, Cl. 260-340.90R.

Hefele, Josef, to Kufner Textilwerke KG. Process for the patterned deposition of powdered thermoplastic adhesive materials on the outer surface of a surface form. 4,139,613, Cl. 427-197.000.

Heim Universal Corp., The: *See*—
McCloskey, Albert R., 4,139,245, Cl. 308-26.000.

Heimann GmbH: *See*—
Dennhoven, Manfred; Kunze, Claus; and Kuehn, Rainhard, 4,139,771, Cl. 250-408.000.

Hein, Leopold A.; and Myers, William N. Apparatus for concentrating solar energy. 4,139,286, Cl. 353-3.000.

Heinzman Engineering, Inc.: *See*—
Groelz, Jay C., 4,139,018, Cl. 137-344.000.

Heleron Corporation: *See*—
Walkiewicz, Zigmunt J., Jr., 4,138,808, Cl. 52-459.000.

Hellstrom, Melbourne J., to CGR Medical Corporation. System for circular and complex tomography. 4,139,776, Cl. 250-445.00T.

Helm, Herbert W., to F. L. Smithe Machine Company, Inc. Apparatus for gumming and folding open end envelopes. 4,138,933, Cl. 93-61.00R.

Henderson, David; and Digel, David B., to Research Technology, Inc. Ultrasonic film cleaning apparatus. 4,138,757, Cl. 15-100.000.

Hengen, Edward J., to Deere & Company. Threshing rotor for a combine. 4,139,013, Cl. 130-27.00H.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Petzold, Manfred; Mahall, Karl; and Goebel, Irmhild, 4,139,553, Cl. 260-501.120.

Schwadtke, Karl; Weber, Rudolf; and Kunzel, Werner, 4,139,475, Cl. 252-8.600.
Henryson, Leif A., to Kockums Construction AB. Lance manipulator. 4,139,185, Cl. 266-226.000.
Henzel, Richard P.: *See*—
Hinshaw, Jerald C.; and Henzel, Richard P., 4,139,389, Cl. 96-73.000.
Hermann, William G.; Martin, Manuel I.; and Meyer, Rolf, to G. D. Searle & Co. Pump. 4,138,931, Cl. 92-87.000.
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., to National Starch and Chemical Corporation. Water insensitive starch fibers and a process for the production thereof. 4,139,699, Cl. 536-109.000.
Herndon, George N., to Marked Money Systems, Inc. Money marking system. 4,139,219, Cl. 283-57.000.
Herrero, Francisco, to Lever Brothers Company. Packaging material. 4,139,665, Cl. 428-35.000.
Herring, Ray N.: *See*—
Miller, Chester W.; and Herring, Ray N., 4,139,172, Cl. 244-45.00R.
Herrnring, Heinz G., to Montblanc-Simplo GmbH. Socket structure for the ball of a ball point pen refill. 4,139,424, Cl. 204-26.000.
Hesnault, Raymond, to Etablissements Bouvry. Installation for the racetrack training of racehorses. 4,138,966, Cl. 119-29.000.
Hettche, Albert: *See*—
Scheuermann, Horst; and Hettche, Albert, 4,139,532, Cl. 546-99.000.
Hewlett-Packard Company: *See*—
Morrill, Justin S., Jr.; Farnbach, William A.; and Small, Charles T., 4,139,903, Cl. 364-900.000.
Hibino, Yozo: *See*—
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Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.
Hijikata, Kazuyuki: *See*—
Watanabe, Masanori; Akima, Yoshiaki; and Hijikata, Kazuyuki, 4,139,042, Cl. 160-36.000.
Hildebolt, William M.: *See*—
Small, Robert E.; Hildebolt, William M.; and Hundt, Murray T., 4,139,648, Cl. 426-511.000.
Hill, C. Lee; and Carmack, John E. Pick-up truck. 4,139,236, Cl. 298-14.000.
Hill, Craig C. Heat recuperative engine. 4,138,847, Cl. 60-508.000.
Hill, Jerry W.: *See*—
Richmond, Kenneth D.; Hill, Jerry W.; Regan, Joseph P.; and Huber, Walter E., 4,139,406, Cl. 156-140.000.
Hill, Loren G., to Norman Manufacturing Co., Inc. Artificial snake-eel body. 4,138,792, Cl. 43-42.240.
Hillebrand, Hans-Peter: *See*—
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, 4,139,328, Cl. 415-1.000.
Hiller, Heinrich: *See*—
Schweckendiek, Walter; Hiller, Heinrich; and Kohlhaupt, Reinhold, 4,139,543, Cl. 260-381.000.
Hillman, Ernest C. Child-proof latch. 4,139,249, Cl. 312-333.000.
Hillstrom, David U.: *See*—
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Hilsum, Cyril, to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, The. Display panel constructions eliminating discontinuities between adjacent panels. 4,139,261, Cl. 350-96.270.
Hilti Aktiengesellschaft: *See*—
Jochum, Peter, 4,138,788, Cl. 42-1.00R.
Richter, Martin; and Busler, Albert, 4,138,922, Cl. 85-62.000.
Hinachi, Matatoyo: *See*—
Matsui, Takeshi; and Hinachi, Matatoyo, 4,139,834, Cl. 340-1.00R.
Hinshaw, Jerald C.; and Henzel, Richard P., to Eastman Kodak Company. Cleavable aromatic nitro compounds. 4,139,389, Cl. 96-73.000.
Hinshaw, Jerald C.: *See*—
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Hintner, Josef: *See*—
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Hippach, Wilburn L., to Power Climber Inc. Hoist apparatus. 4,139,178, Cl. 254-175.500.
Hirai, Yutaka: *See*—
Yamamoto, Ryuichi; Hirai, Yutaka; and Nagata, Teruyuki, 4,139,562, Cl. 260-575.000.
Hirano, Itsuo: *See*—
Kawakami, Noboru; Goto, Takeji; Hirano, Itsuo; and Itakura, Yoichi, 4,139,181, Cl. 266-148.000.
Hiraoka, Nobuaki; and Matumoto, Syuji, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Process for manufacturing butt-welded steel pipe. 4,139,139, Cl. 228-102.000.
Hirose, Noriyasu; and Kuriyama, Shizuo, to Eisai Co., Ltd. Psychotropic 2-trifluoromethyl-10-[3-(3-hydroxy-pyrrolidino)-propyl]-phenothiazine compounds. 4,139,632, Cl. 424-247.000.
Hitachi Cable, Ltd.: *See*—
Kawano, Hideo; Mitsugi, Sadahiko; Dietrich, Oelhschlagel; and Yamaji, Kenkichi, 4,138,871, Cl. 72-60.000.
Hitachi, Ltd.: *See*—
Ienaka, Masanori; and Kominami, Yasuo, 4,139,738, Cl. 179-15.0BT.
Inose, Fumiyuki; Endo, Hirohido; and Komatsu, Akio, 4,139,838, Cl. 340-703.000.
Inoue, Shigeki; and Akitake, Isao, 4,139,825, Cl. 330-260.000.
Katagiri, Shinjiro, 4,139,774, Cl. 250-441.000.
Ninomiya, Yasumasa; Nabeshima, Yasuo; Sugiyama, Kengo; and Hibino, Yozo, 4,139,107, Cl. 214-40.000.
Oyama, Tadao, 4,138,774, Cl. 29-25.190.
Watanabe, Naomitsu, 4,139,657, Cl. 427-68.000.
Yoshino, Yoshimi; and Sugishita, Nobuyuki, 4,139,832, Cl. 338-308.000.
Hix, Diana L.; Johnson, Charles L.; and Abner, Harold D., to Procter & Gamble Company, The. Snack food package. 4,139,643, Cl. 426-122.000.
Hlousek, Jaroslav: *See*—
Cibulka, Josef; Hlousek, Jaroslav; Jelinek, Richard; Krtek, Jan; and Winkler, Jiri, 4,139,788, Cl. 307-350.000.
Hobas Engineering AG: *See*—
Carlstrom, Borge I., 4,139,025, Cl. 138-153.000.
Hochiki Corporation: *See*—
Watanabe, Masakatsu, 4,139,843, Cl. 340-505.000.
Hochreuter, Richard, to Sandoz Ltd. Polychlorohydrin ethers of tris-(hydroxymethyl)-aminomethane in association with polyglycol diamines. 4,139,478, Cl. 252-8.800.
Hochreuter, Richard; and Runyon, James R., to Sandoz Ltd. Polymeric basic amides. 4,139,689, Cl. 526-52.400.
Hodson, Hollis C. Collapsible tea table system. 4,138,952, Cl. 108-116.000.
Hoechst Aktiengesellschaft: *See*—
Janocha, Siegfried; Unger, Manfred; and Hoheisel, Klaus, 4,139,518, Cl. 260-40.00R.
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.
Meininger, Fritz; Hunger, Klaus; and Springer, Hartmut, 4,139,527, Cl. 260-199.000.
Rudolphy, Albert, 4,139,500, Cl. 260-19.0UA.
Thoese, Klaus; and Jung, Karl-Heinz, 4,139,506, Cl. 260-16.000.
von der Eltz, Hans-Ulrich, 4,139,344, Cl. 8-21.00R.
Hoesch Werke Aktiengesellschaft: *See*—
Kopineck, Hermann J.; and Bottcher, Wolfgang, 4,138,896, Cl. 73-643.000.
Hofferberth, William H., to I-T-E Imperial Corporation. Stationary contact combination. 4,139,754, Cl. 200-281.000.
Hoffman, David A., to Bendix Corporation, The. Vehicle braking systems. 4,139,238, Cl. 303-7.000.
Hoffmann, Arthur K.: *See*—
Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,139,707, Cl. 548-320.000.
Hoffmann, Dieter: *See*—
Simon, Ulrich; Werner, Klaus-Dieter; Hoffmann, Dieter; and Pontani, Bernd, 4,139,413, Cl. 176-38.000.
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-alkyl-S-alkyl-O-(4-trifluoromethylthio-phenyl)-(thiono)-thiol-phosphoric acid esters and pesticidal compositions and methods. 4,139,615, Cl. 424-216.000.
Hoffmann-La Roche Inc.: *See*—
Furst, Andor; Gutzwiller, Jurg A. W.; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,139,716, Cl. 560-257.000.
Huppi, Gerhard; DeSilva, Wijitha; and Ryser, Gottlieb, 4,139,367, Cl. 71-94.000.
Leimgruber, Willy; and Valentine, Donald H., Jr., 4,139,720, Cl. 568-596.000.
Hoffner, Joel L.: *See*—
Yerkes, Ronald W.; Hoffner, Joel L.; Galanis, Tom L.; and Hostetter, Richard S., Jr., 4,139,890, Cl. 364-472.000.
Hofmeister, Wolfgang: *See*—
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Hoglan, Jack M.: *See*—
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Hoglund, Nils O., to Hoglund Tri-Ordinate Corporation. Apparatus for removing machining burrs. 4,138,926, Cl. 90-24.00A.
Hoglund Tri-Ordinate Corporation: *See*—
Hoglund, Nils O., 4,138,926, Cl. 90-24.00A.
Hoheisel, Klaus: *See*—
Janocha, Siegfried; Unger, Manfred; and Hoheisel, Klaus, 4,139,518, Cl. 260-40.00R.
Holecek, Rudolph; Mouchikhine, Paul; and Renault, Serge A., to Corning Glass Works. Method of forming a vessel with pouring lip. 4,139,358, Cl. 65-68.000.
Holmberg, Roy B., to Aktiebolaget Svenska Flaktfabriken. Contact body for liquid and gas. 4,139,584, Cl. 261-112.000.
Holme, Rudolph N., to American Cyanamid Company. Combination of a fatty acid and an N-sulfodicarboxylic acid asparate as collectors for non-sulfide ores. 4,139,482, Cl. 252-61.000.
Holmes, Allen B.; and Gehman, Stacy E., to United States of America, Army. Hydrostatic accelerometer. 4,138,893, Cl. 73-516.0LM.
Holmes, Elmond A.; and Rohrback, Gilson H., to Rohrback Corporation. Method and apparatus for detecting and measuring scale. 4,138,878, Cl. 73-15.00R.
Holmes, Gordon W., to Professional Packaging Limited. Hinged holder for disc-like objects. 4,139,093, Cl. 206-0.820.
Holt, Arthur W., to Videofax Communications Corporation. High-resolution information storage and retrieval system including electronic refresh buffer. 4,139,869, Cl. 360-35.000.

Holz, William L.; Kinkade, Franklin C.; and Robbins, Fred, to Mid-Iowa Concrete Products Company. Method and apparatus for making molded articles. 4,139,593, Cl. 264-333.000.
Home Curtain Corp.: *See—*
Levenstein, Stanley, 4,138,954, Cl. 112-155.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honda GikenKogyo Kabushiki Kaisha: *See—*
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Honeywell Inc.: *See—*
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Peterson, Dean M.; and Diddens, Paul A., 4,139,856, Cl. 346-163.000.
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van Laar, Jacobus; and Kastelic, Wilhelmus A. J., 4,139,183, Cl. 266-197.000.
Hooker Chemicals & Plastics Corp.: *See—*
Lin, Henry C., 4,139,516, Cl. 260-327.00P.
Wallace, Bruce S., 4,139,448, Cl. 204-256.000.
Hooper, Peter E., to Davis, Arnold. Sheet metal bending machine. 4,138,875, Cl. 72-307.000.
Hoover, Alan W., to International Telephone & Telegraph Corp. Temperature compensation circuit for image intensifiers. 4,139,798, Cl. 315-10.000.
Hopkins, Walter M. Expansible chamber apparatus with pairs of cylindrical rollers. 4,139,336, Cl. 418-142.000.
Hori, Jiro. Writing element for use in ball point pen. 4,139,313, Cl. 401-216.000.
Horizons Research Incorporated: *See—*
Reynard, Kennard A.; and Gerber, Arthur H., 4,139,598, Cl. 423-300.000.
Horn, Jerald S.: *See—*
Baum, Kurt; Lerdal, Duane A.; and Horn, Jerald S., 4,139,403, Cl. 149-88.000.
Hornbacher, Walter. Filing system for vertically suspending documents. 4,139,248, Cl. 312-184.000.
Horowska, Barbara: *See—*
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.
Hoshino, Kazuo; and Tsunada, Naomasa, to Nissan Motor Company, Limited. Adjusting device for an internal shoe drum brake. 4,139,083, Cl. 188-79.5GC.
Hosoya, Mitsuru: *See—*
Iida, Mikio; and Hosoya, Mitsuru, 4,139,865, Cl. 358-188.000.
Hostetter, Richard S., Jr.: *See—*
Yerkes, Ronald W.; Hoffner, Joel L.; Galanis, Tom L.; and Hostetter, Richard S., Jr., 4,139,890, Cl. 364-472.000.
Hottinger Baldwin Measurements, Inc.: *See—*
Lockery, Harry E.; and Ballou, Harold O., 4,138,882, Cl. 73-767.000.
Howe, Frank D., to Ingersoll-Rand Company. Seal housing means. 4,139,204, Cl. 277-123.000.
Howe, Robert K., to Monsanto Company. 2-[5-aryl-2-isoxazolin-3-yl]benzoates and use as herbicides. 4,139,366, Cl. 71-94.000.
Hruby, John O., Jr. Loudspeaker enclosure with enhanched bass response. 4,139,076, Cl. 181-151.000.
Huber, Walter E.: *See—*
Richmond, Kenneth D.; Hill, Jerry W.; Regan, Joseph P.; and Huber, Walter E., 4,139,406, Cl. 156-140.000.
Hucker, David J.; and Glennon, Timothy F., to Sundstrand Corporation. Multi-channel generator drive system. 4,139,780, Cl. 307-86.000.
Hucker, David J., to Sundstrand Corporation. Rotor short-circuiting switch. 4,139,807, Cl. 318-718.000.
Hudson, Gerald E. Plug retaining device. 4,139,253, Cl. 339-75.00P.
Hugelin, Bernard: *See—*
Reinehr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,139,560, Cl. 260-570.80R.
Huggins, Ernest E. J., to Post Office, The. Battery charging apparatus. 4,139,812, Cl. 320-7.000.
Hughes Aircraft Company: *See—*
Sheldrake, Stephen J.; and Wang, Harry H. L., 4,139,342, Cl. 8-4.000.
Huhne, Gerd; and Stolz, Hans-Peter, to Pietzsch, Ing. Ludwig. Endless track. 4,139,241, Cl. 305-51.000.
Humphreys, Donald R. Adjustable shoe-skate assembly. 4,139,209, Cl. 280-11.120.
Hundt, Murray T.: *See—*
Small, Robert E.; Hildebolt, William M.; and Hundt, Murray T., 4,139,648, Cl. 426-511.000.
Hung, Yau Y.; and Grant, Ralph M., to Dr. Ralph M. Grant Engineering Consultants, Inc. Method and apparatus for interferometric deformation analysis. 4,139,302, Cl. 356-32.000.
Hunger, Klaus: *See—*
Meininger, Fritz; Hunger, Klaus; and Springer, Hartmut, 4,139,527, Cl. 260-199.000.
Hunt, Peter, to Lucas Industries Limited. Sleeve supported two pole rotor assembly. 4,139,789, Cl. 310-40.00R.
Hupperich, Peter J., to Ethyl Products Company. Container and grinder combination. 4,139,161, Cl. 241-162.000.
Huppi, Gerhard; DeSilva, Wijitha; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. Piperidine salts as plant growth regulants. 4,139,367, Cl. 71-94.000.
Hurley, James E., to McGraw-Edison Company. Oven door hinge. 4,138,988, Cl. 126-194.000.
Huron Tool & Manufacturing Division of U.S. Industries, Inc.: *See—*
Oldford, William G., 4,138,776, Cl. 29-159.00R.
Hussmann, Eckart, to JENAer Glaswerk Schott & Gen. Fibrous wall material for cell structures of solar energy collectors. 4,138,990, Cl. 126-270.000.
Hutchings, Le Roi E., to UOP Inc. Hydrorefining an asphaltene-containing black oil with unsupported vanadium catalyst. 4,139,453, Cl. 208-213.000.
Hutley, Ronald, to Sperry Rand Corporation. Printing device for printing on a continuously moving form. 4,138,942, Cl. 101-93.080.
Hutni projekt Praha, projekcni a inzenyrska organizace: *See—*
Limberg, Jaroslav, 4,139,419, Cl. 202-262.000.
I-T-E Imperial Corporation: *See—*
Hofferberth, William H., 4,139,754, Cl. 200-281.000.
Kelly, Walter B.; and Pokorny, Frank J., 4,139,747, Cl. 200-48.0KB.
Ichihara, Masuji: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kato, Yasuyuki; and Ichihara, Masuji, 4,139,692, Cl. 526-218.000.
ICI Americas Inc.: *See—*
Kuehn, Erich, 4,139,577, Cl. 260-871.000.
Rutledge, Thomas F., 4,139,544, Cl. 260-396.00N.
ICI Australia Limited: *See—*
Wade, Keith O.; and Brown, Jerry H., 4,139,499, Cl. 521-32.000.
Ienaka, Masanori; and Kominami, Yasuo, to Hitachi, Ltd. Multiplex decoder having a distortion-free differential amplifier. 4,139,738, Cl. 179-15.0BT.
Iglehard, Hilary H.: *See—*
Payne, Bobby L.; and Iglehard, Hilary H., 4,139,334, Cl. 417-545.000.
Iida, Mikio; and Hosoya, Mitsuru, to Sony Corporation. Television receiver with video changeover switch responsive to channel selector. 4,139,865, Cl. 358-188.000.
Iida, Noriyoshi: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.
Ikeda, Tomoaki; Misu, Hiroshi; Aotani, Yoshimasa; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Light-sensitive resin composition and metal image-forming material using the same. 4,139,391, Cl. 96-115.00R.
Illinois Tool Works Inc.: *See—*
Baer, Martin A., 4,138,754, Cl. 10-2.000.
Kobetsky, Robert G., 4,139,408, Cl. 156-380.000.
Ilzig, Karl F.; and Scheidemann, Hans, to Original Hanau Quarzlampen GmbH. Rotary joint, particularly to suspend heavy metal weights from a ceiling, such as an operating room light. 4,139,883, Cl. 362-404.000.
Imada, Isuke: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,139,545, Cl. 260-396.00R.
Imai, Kiyoshi: *See—*
Itoh, Kunio; Imai, Kiyoshi; Tanaka, Masaki; and Kumagae, Kimitaka, 4,139,519, Cl. 260-42.260.
Imamura, Koichi: *See—*
Nagai, Koichi; Ishikawa, Ryuji; Imamura, Koichi; Fujimura, Fumio; and Shiokoshi, Youhei, 4,139,675, Cl. 428-349.000.
Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, to Kao Soap Co., Ltd. Detergent composition. 4,139,485, Cl. 252-135.000.
Imperial Chemical Industries Limited: *See—*
Crabtree, Allen; Marshall, William J.; and Plant, David W., 4,139,345, Cl. 8-25.000.
Fishwick, Brian R.; and Quayle, Arthur, 4,139,528, Cl. 260-207.100.
Greenway, John M.; and Shaw, Frederick W., 4,138,840, Cl. 57-289.000.
Robinson, James D., 4,139,115, Cl. 220-74.000.
Inami, Yasuhiko: *See—*
Yano, Kozo; Inami, Yasuhiko; and Uede, Hisashi, 4,139,275, Cl. 350-357.000.
Industrie Pirelli, S.p.A.: *See—*
Gallizia, Achille, 4,139,592, Cl. 264-279.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Parodi, Mario, 4,138,822, Cl. 33-174.00P.
Salmon, Mario, 4,139,888, Cl. 364-105.000.
Ingalls, Jeffrey D.: *See—*
Cosco, Robert J.; and Ingalls, Jeffrey D., 4,139,805, Cl. 315-241.00R.
Inge, Andy. Device for locating celestial bodies. 4,138,826, Cl. 33-268.000.
Ingels, George W. Apparatus for vehicle position indication. 4,139,889, Cl. 364-460.000.
Ingersoll-Rand Company: *See—*
Howe, Frank D., 4,139,204, Cl. 277-123.000.
Inose, Fumiyuki; Endo, Hirohido; and Komatsu, Akio, to Hitachi, Ltd. Color pattern and alphanumeric character generator for use with raster-scan display devices. 4,139,838, Cl. 340-703.000.
Inoshita, Teruaki: *See—*
Takaoka, Hikaru; Inoshita, Teruaki; Fukuda, Takashi; and Toga, Hitoshi, 4,138,775, Cl. 29-156.40R.

Inoue, Mamoru: *See—*
Takayanagi, Takeo; Inoue, Mamoru; Kuwano, Satoshi; Minabe, Hitoshi; and Yabuzaki, Shunichi, 4,138,835, Cl. 53-474.000.
Inoue, Naofumi; Furukawa, Itsuro; and Usami, Toshio, to Mitsui Petrochemical Industries Ltd. Flexible multilayer tubular structure for irrigation and process for its preparation. 4,139,159, Cl. 239-547.000.
Inoue, Shigeki; and Akitake, Isao, to Hitachi, Ltd. Audio frequency amplifier. 4,139,825, Cl. 330-260.000.
Inoue, Takasuki: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuki; and Maruyama, Mikio, 4,139,180, Cl. 266-69.000.
Inoue, Takehisa: *See—*
Miwa, Kishio; Inoue, Takehisa; and Tsunoi, Kazuo, 4,139,572, Cl. 260-674.0SA.
Institut Francais du Petrole: *See—*
Cholet, Jacques; and Magneville, Pierre, 4,139,835, Cl. 340-12.00R.
Institute of Gas Technology, a nonprofit corporation: *See—*
Wurm, Jaroslav, 4,138,861, Cl. 62-480.000.
International Audio Visual, Inc.: *See—*
Dyck, Arthur, 4,139,165, Cl. 242-56.900.
International Business Machines Corporation: *See—*
Anantha, Narasipur G.; Chang, Fung Y.; and Rubin, Barry J., 4,139,910, Cl. 365-183.000.
Bondur, James A.; and Pogge, Hans B., 4,139,442, Cl. 204-192.00E.
Chandra, Ashok K.; and Wong, Chak-K., 4,139,904, Cl. 365-3.000.
Clecak, Nicholas J.; Grant, Barbara D.; Jaffe, Annette B.; and Keller, Gary S., 4,139,276, Cl. 350-357.000.
De la Moneda, Francisco H.; and Kotecha, Harish N., 4,138,782, Cl. 29-571.000.
International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., 4,139,650, Cl. 426-538.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Goossens, Alfred E.; and Vock, Manfred H., 4,139,541, Cl. 260-345.80R.
Mussinan, Cynthia J.; Vock, Manfred H.; and Liberman, Arthur L., 4,139,649, Cl. 426-533.000.
Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., 4,139,484, Cl. 252-89.00R.
International Harvester Company: *See—*
Melles, Harold W., 4,138,907, Cl. 74-687.000.
International Paint Co. Ltd., The: *See—*
Dennington, Simon P. J., 4,139,515, Cl. 260-29.6MM.
International Standard Electric Corporation: *See—*
Crossland, William A.; Morrissy, Joseph H.; and Needham, Barbara, 4,139,273, Cl. 350-340.000.
International Telephone & Telegraph Corp.: *See—*
Hoover, Alan W., 4,139,798, Cl. 315-10.000.
INTERx Research Corporation: *See—*
Bodor, Nicolae S.; and Sloan, Kenneth B., 4,139,709, Cl. 548-356.000.
Inuzuka, Tsuneki: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.
Irvin Industries Inc.: *See—*
Lang, David; and Lobanoff, Mark, 4,139,231, Cl. 296-37.160.
Isago, Takao; and Komazaki, Tomokazu, to Kokusai Denshin Denwa Co., Ltd. Method for adjusting a band division type equalizer. 4,139,829, Cl. 333-28.00R.
Isenberg, Arnold O., to Westinghouse Electric Corp. Resistor-type solid electrolyte oxygen sensor. 4,138,881, Cl. 73-27.00R.
Ishiguro, Yasuo; and Kurosu, Tomio, to Copal Company Limited. Device for indicating fading operation. 4,139,282, Cl. 352-91.00C.
Ishikawa, Koji: *See—*
Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, 4,139,672, Cl. 428-323.000.
Ishikawa, Ryuji: *See—*
Nagai, Koichi; Ishikawa, Ryuji; Imamura, Koichi; Fujimura, Fumio; and Shiokoshi, Youhei, 4,139,675, Cl. 428-349.000.
Ishikawajima-Harima Jukogyo Kabushi Kaisha: *See—*
Ueno, Toshiyuki; Itoh, Isamu; and Morita, Yasuyuki, 4,139,320, Cl. 405-138.000.
Ishimoto, Sachio: *See—*
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.
Isobe, Masao: *See—*
Hayashi, Shigeyuki; Isobe, Masao; and Yamashita, Tadakazu, 4,139,511, Cl. 260-28.5AS.
Israel Aircraft Industries Ltd.: *See—*
Varadi, Thomas, 4,139,228, Cl. 294-83.00R.
Itai, Kosaku; and Ueda, Yoshihiro, to Mitsubishi Denki Kabushiki Kaisha. Gas-type circuit-breaker. 4,139,752, Cl. 200-148.00R.
Itakura, Yoichi: *See—*
Kawakami, Noboru; Goto, Takeji; Hirano, Itsuo; and Itakura, Yoichi, 4,139,181, Cl. 266-148.000.
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuki; and Maruyama, Mikio, to Mitsui Engineering & Shipbuilding Co., Ltd. Apparatus for breaking up large construction. 4,139,180, Cl. 266-69.000.
Ito, Tadashi: *See—*
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,139,289, Cl. 354-23.00D.
Itoh, Isamu: *See—*
Ueno, Toshiyuki; Itoh, Isamu; and Morita, Yasuyuki, 4,139,320, Cl. 405-138.000.
Itoh, Kunio; Imai, Kiyoshi; Tanaka, Masaki; and Kumagae, Kimitaka, to Shin-Etsu Chemical Co., Ltd. Curable compositions based on silicon-containing butadiene polymers. 4,139,519, Cl. 260-42.260.
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst for hydrofining petroleum wax. 4,139,494, Cl. 252-455.00R.
ITT Industries, Inc.: *See—*
Micic, Ljubomir; Schat, Hermannus; Freyberger, Laurin C.; and Ullrich, Manfred F., 4,139,860, Cl. 358-22.000.
Postema, Pieter M.; and Gorissen, Adrianus M. J., 4,139,186, Cl. 267-64.00B.
ITW Ateco GmbH: *See—*
Albern, Helmut, 4,139,314, Cl. 403-14.000.
Ivanyatov, Jury E.: *See—*
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Dychkin, Mikhail M., 4,139,105, Cl. 214-8.50D.
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kalininskaya, Vera N., 4,139,422, Cl. 204-2.100.
Iwasaki, Masayuki; Misu, Hiroshi; and Miyano, Shizuo, to Fuji Photo Film Co., Ltd. Photosensitive polymeric o-quinone diazide containing lithographic printing plate and process of using the plate. 4,139,384, Cl. 96-33.000.
Iwata, Osami: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.
Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for supporting a pickup arm on a disc player. 4,139,200, Cl. 274-23.00A.
Izumi, Masahiko. Cold storage apparatus. 4,138,858, Cl. 62-309.000.
Jabs, Gert; and Loew, Gunther, to Bayer Aktiengesellschaft. Process for making hydrophilic elastomeric polyurethane resin wiping cloths and the resultant product. 4,139,686, Cl. 521-121.000.
Jackson, Dennis H. Steam generation and pollution control system. 4,138,852, Cl. 60-670.000.
Jacobs, Jacobus H.; Van Esdonk, Johannes; and Franssen, Johannes P. T., to U.S. Philips Corporation. Gas discharge display panel and method of manufacturing the same. 4,139,250, Cl. 316-19.000.
Jacobson, Allan J.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Cells having cathodes derived from ammonium-copper-molybdenum-chalcogen compounds. 4,139,682, Cl. 429-218.000.
Jacobson, Conrad E.: *See—*
Maple, James A.; and Jacobson, Conrad E., 4,139,142, Cl. 228-175.000.
Jacquelin, Jean: *See—*
Appleby, Anthony J.; and Jacquelin, Jean, 4,139,679, Cl. 429-21.000.
Jacques, Andre: *See—*
Bouygues, Jean; Dubos, Jacques; and Jacques, Andre, 4,139,260, Cl. 350-96.220.
Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, to C-G Corp. Cyclic-substituted derivatives of 1-amino-2-propanol. 4,139,623, Cl. 424-251.000.
Jaffe, Annette B.: *See—*
Clecak, Nicholas J.; Grant, Barbara D.; Jaffe, Annette B.; and Keller, Gary S., 4,139,276, Cl. 350-357.000.
Jaffrey Fire Protection Company, Inc.: *See—*
Leach, Paul A., 4,139,224, Cl. 285-253.000.
Jahan, Christian C.; and Bouvin, Jacques, to Exxon Research & Engineering Co. Transferring heat from relatively cold to relatively hot locations. 4,138,855, Cl. 62-112.000.
Jakob, Herbert E.; and Silbernagel, Richard A., to CMI Corporation. Method and apparatus for planing a paved roadway. 4,139,318, Cl. 404-90.000.
Jakusch, Heinz: *See—*
Knotik, Karl; Leichter, Peter; and Jakusch, Heinz, 4,139,488, Cl. 252-301.10W.
Jamison, Gerald A. Vehicular desk unit. 4,139,217, Cl. 281-15.00A.
Janocha, Siegfried; Unger, Manfred; and Hoheisel, Klaus, to Hoechst Aktiengesellschaft. Polyethylene terephthalate composition and shaped articles. 4,139,518, Cl. 260-40.00R.
Janssen, Edward W.; and Simpson, Jon H., to Minnesota Mining and Manufacturing Company. Consolidation of aggregate material. 4,139,676, Cl. 428-402.000.
Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan, 4,139,540, Cl. 260-340.90R.
Japan Atomic Energy Research Institute: *See—*
Araki, Kunio; Makuuchi, Keizo; Takagi, Tohru; and Nakayama, Hiroyuki, 4,139,437, Cl. 204-159.160.
Japan New Plate Hokusho Industrial Co. Ltd.: *See—*
Watanabe, Masanori; Akima, Yoshiaki; and Hijikata, Kazuyuki, 4,139,042, Cl. 160-36.000.
Japan Radio Company, Limited: *See—*
Shimzu, Toshio; and Goto, Shuichi, 4,139,847, Cl. 343-5.00W.
Japan Synthetic Rubber Co., Ltd.: *See—*
Torigoe, Yoshikazu; Ohshima, Noboru; Watanabe, Masaaki; and Okuya, Eitaro, 4,139,690, Cl. 526-174.000.
Japanese National Railways: *See—*
Ninomiya, Yasumasa; Nabeshima, Yasuo; Sugiyama, Kengo; and Hibino, Yozo, 4,139,107, Cl. 214-40.000.
Ueno, Toshiyuki; Itoh, Isamu; and Morita, Yasuyuki, 4,139,320, Cl. 405-138.000.
Jarmann, Adolf. Tool for removing and inserting bolts in connecting rods. 4,138,780, Cl. 29-525.000.
Jasani, Shirish R., to Goodyear Tire & Rubber Company, The. Polyetherurethane composition and polymer prepared by photopolymerization. 4,139,436, Cl. 204-159.160.

Jelenevsky, Alex M.: *See—*
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., 4,139,533, Cl. 546-156.000.
Jelinek, Richard: *See—*
Cibulka, Josef; Hlousek, Jaroslav; Jelinek, Richard; Krtek, Jan; and Winkler, Jiri, 4,139,788, Cl. 307-350.000.
JENAer Glaswerk Schott & Gen.: *See—*
Hussmann, Eckart, 4,138,990, Cl. 126-270.000.
Jenkins, Leonard A.: *See—*
Shutie, Orin S.; and Jenkins, Leonard A., 4,139,656, Cl. 427-47.000.
Jensen, James W., to Gulf & Western Manufacturing Company. Article feed mechanism. 4,139,089, Cl. 198-621.000.
Jet Spray Cooler, Inc.: *See—*
Arzberger, William A.; and La Lumiere, Edward J., 4,139,125, Cl. 222-129.400.
Joanna Western Mills Company: *See—*
Donofrio, John D., 4,139,043, Cl. 160-236.000.
Jochum, Peter, to Hilti Aktiengesellschaft. Explosive powder operated setting device. 4,138,788, Cl. 42-1.00R.
Joh. A. Benckiser GmbH: *See—*
Krueger, Friedrich; and Michel, Walter, 4,139,554, Cl. 260-502.500.
Johanns, Heinz: *See—*
Tabel, Walter; and Johanns, Heinz. 4,139,163, Cl. 242-56.00R.
Johannsen, Donald O.: *See—*
Goodney, Thomas O.; Johannsen, Donald O.; and Kubesheski, John T., 4,139,066, Cl. 172-803.000.
Johns-Manville Corporation: *See—*
Zack, Arthur E., 4,139,026, Cl. 138-178.000.
Johnsen, Oystein, to Myrens Verksted A/S. System for forming and treating a narrow multi-layer web. 4,139,411, Cl. 162-123.000.
Johnsen, Oystein: *See—*
Fritzvold, Bjorn H.; Lynghjem, Arne; Johnsen, Oystein; and Eriksen, Leif H., 4,139,467, Cl. 210-97.000.
Johnson, Charles L.: *See—*
Hix, Diana L.; Johnson, Charles L.; and Abner, Harold D., 4,139,643, Cl. 426-122.000.
Johnson, Matthey & Co., Limited: *See—*
Notton, John H. F., 4,139,373, Cl. 75-175.500.
Johnson, Randall S.; and Wolfe, Terry L., to PPG Industries, Inc. Method and apparatus for shaping glass sheets by roll forming. 4,139,359, Cl. 65-107.000.
Johnson, Stephen. Bolt extractor. 4,138,909, Cl. 81-53.200.
Johnston, John R.: *See—*
Doyle, George H.; and Johnston, John R., 4,138,989, Cl. 126-270.000.
Johren, Paul: *See—*
Duck, Gerhard; Morsbach, Martin; and Johren, Paul, 4,139,205, Cl. 277-140.000.
Jones, Addison B.; and Fewer, William R., to Rockwell International Corporation. Method and apparatus for thermally stabilizing workpieces. 4,139,051, Cl. 165-1.000.
Jones, Arthur L.: *See—*
Williams, James A.; and Jones, Arthur L., 4,138,815, Cl. 32-22.000.
Joos, Bernhard: *See—*
Tur, Wladimir, 4,139,660, Cl. 427-353.000.
Jost, Theodor. Apparatus for sucking up dry or wet pollutants from the floor or ground. 4,138,762, Cl. 15-419.000.
Juhasz, Joseph L.: *See—*
Frost, Richard B.; Juhasz, Joseph L.; and Wing, Barry W., 4,138,817, Cl. 33-1.0SD.
Jujo Paper Co., Ltd.: *See—*
Nagai, Koichi; Ishikawa, Ryuji; Imamura, Koichi; Fujimura, Fumio; and Shiokoshi, Youhei, 4,139,675, Cl. 428-349.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Mages, Bernhard, 4,138,766, Cl. 16-145.000.
Jung, Johann: *See—*
Zeeh, Bernd; Jung, Johann; and Ammermann, Eberhard, 4,139,641, Cl. 426-69.000.
Jung, Karl-Heinz: *See—*
Thoese, Klaus; and Jung, Karl-Heinz, 4,139,506, Cl. 260-16.000.
Jung, Michel: *See—*
Metcalf, Brian W.; and Jung, Michel, 4,139,563, Cl. 260-583.00H.
Jurisich, Peter L. Reinforced plastic molding material. 4,139,591, Cl. 264-257.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Komaki, Shojiro; and Shimotsuma, Nobuo, 4,138,841, Cl. 58-23.00R.
Yoda, Kazuhiro, 4,139,271, Cl. 350-337.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Kato, Hiroshi, 4,138,918, Cl. 84-1.030.
Sakashita, Noriji; and Kitagawa, Hiroshi, 4,138,917, Cl. 84-1.010.
Kabushiki Kaisha Kawaigakki: *See—*
Kitagawa, Hiroshi, 4,138,916, Cl. 84-1.010.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Takaoka, Hikaru; Inoshita, Teruaki; Fukuda, Takashi; and Toga, Hitoshi, 4,138,775, Cl. 29-156.40R.
Kaczkowski, Bernard C.: *See—*
Baumann, Frederick W.; and Kaczkowski, Bernard C., 4,139,049, Cl. 164-292.000.
Kahn, William J. Instant scaffold and paint can holder. 4,139,173, Cl. 248-311.10R.
Kaino, Masami S.: *See—*
Crepeau, Philip C.; and Kaino, Masami S., 4,139,149, Cl. 235-383.000.
Kakuse, Junko: *See—*
Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, 4,139,485, Cl. 252-135.000.
Kaley, Bernadette: *See—*
Kaley, George; and Kaley, Bernadette, 4,139,208, Cl. 280-9.000.
Kaley, George; and Kaley, Bernadette. Multipurpose light cart. 4,139,208, Cl. 280-9.000.
Kalininskaya, Vera N.: *See—*
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kalininskaya, Vera N., 4,139,422, Cl. 204-2.100.
Kalk, Walter; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Benzo-[c]-cinnolinium dyestuffs. 4,139,530, Cl. 544-234.000.
Kalopissis, Gregoire; and Manoussos, Georges, to L'Oreal. Cysteamine derivatives for oral treatment of seborrhea. 4,139,635, Cl. 424-320.000.
Kameyama, Yukio: *See—*
Yoshida, Takeshi; Kameyama, Yukio; Masuko, Hitoshi; and Yaguchi, Keiichi, 4,139,871, Cl. 360-64.000.
Kamp, Heinz; and Raasch, Hans, to W. Schlafhorst & Co. Magazine assembly for coil cores or tubes. 4,139,108, Cl. 214-41.00R.
Kampmann, Ingo: *See—*
Kampmann, Walter; and Kampmann, Ingo, 4,138,908, Cl. 76-26.000.
Kampmann, Walter; and Kampmann, Ingo, to Beche & Grohs GmbH. Apparatus for the dressing (straightening) of circular-saw blanks and especially hot-sawing circular-sawblade blanks. 4,138,908, Cl. 76-26.000.
Kanada, Mitsuhiro: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, 4,139,513, Cl. 260-29.6TA.
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; and Yoshikawa, Toshiharu, 4,139,548, Cl. 260-448.20B.
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kato, Yasuyuki; and Ichihara, Masuji, 4,139,692, Cl. 526-218.000.
Kanavas, James G. Training device for improving accuracy in hitting a ball. 4,139,198, Cl. 273-186.00A.
Kanbe, Yasuhide; Yamada, Shigemichi; Nakagawa, Tadashi; and Noguchi, Mitsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Dry disc-type clutch. 4,139,085, Cl. 192-107.00R.
Kanber, Hilda; Rudnick, Isadore; and Wang, Taylor G., to United States of America, Administrator National Aeronautics & Space Administration. Acoustic driving of rotor. 4,139,806, Cl. 318-116.000.
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, to Hoechst Aktiengesellschaft. Desulphurization of an iron melt. 4,139,369, Cl. 75-58.000.
Kanome, Shinji: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, 4,139,513, Cl. 260-29.6TA.
Kansai Paint Co., Ltd.: *See—*
Araki, Kunio; Makuuchi, Keizo; Takagi, Tohru; and Nakayama, Hiroyuki, 4,139,437, Cl. 204-159.160.
Kao Soap Co., Ltd.: *See—*
Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, 4,139,485, Cl. 252-135.000.
Matsunaga, Kinjiro; Masuda, Shinichi; Nakagawa, Yunosuke; and Tachibana, Kyozaburo, 4,139,509, Cl. 260-17.00R.
Karadavidoff, Isaac; Stjepanovic, Milorad; Moreau, Michele; and Rohrbach, Philippe, to Bottu. Esters of disubstituted isobutyric acids and pharmaceutical compositions containing the same. 4,139,631, Cl. 424-285.000.
Karashima, Masashi. Goods showcase. 4,139,247, Cl. 312-130.000.
Karl Schmidt GmbH: *See—*
Steidle, Werner; Sander, Wilfried; and Deubelbeiss, Ernst, 4,138,984, Cl. 123-193.00P.
Karlsson, Gosta, to ASEA Aktiebolag. Electric induction heating furnace. 4,139,722, Cl. 13-4.000.
Kastelic, Wilhelmus A. J.: *See—*
van Laar, Jacobus; and Kastelic, Wilhelmus A. J., 4,139,183, Cl. 266-197.000.
Kastin, Abba J.: *See—*
Coy, David H.; and Kastin, Abba J., 4,139,504, Cl. 260-8.000.
Katagiri, Shinjiro, to Hitachi, Ltd. Apparatus for irradiating a specimen by an electron beam. 4,139,774, Cl. 250-441.000.
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, to Canon Kabushiki Kaisha. Copying apparatus with variable stop position. 4,139,300, Cl. 355-14.000.
Katchman, Arthur: *See—*
Cooper, Glenn D.; and Katchman, Arthur, 4,139,574, Cl. 260-836.000.
Kato, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho; Sanyo Denki Kabushiki Kaisha; and Tokyo Sanyo Denki Kabushiki Kaisha. Automatic musical instrument. 4,138,918, Cl. 84-1.030.
Kato, Yasuyuki: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kato, Yasuyuki; and Ichihara, Masuji, 4,139,692, Cl. 526-218.000.
Katsumoto, Kiyoshi: *See—*
Anshus, Byron E.; Katsumoto, Kiyoshi; and Serkes, Ira M., 4,139,696, Cl. 528-312.000.
Kawada, Mitsuru: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,139,545, Cl. 260-396.00R.

Kawai, Shunichi: *See*—
Nakao, Toshiyuki; Kawai, Shunichi; and Yamaguchi, Hiroji, 4,138,906, Cl. 74-674.000.

Kawakami, Akira; Ogoshi, Toshiaki; Aoki, Yoshio; and Honda, Masao, to Lion Fat & Oil Co., Ltd., The. Process of manufacturing high-concentration olefin sulfonate solution. 4,139,498, Cl. 252-555.000.

Kawakami, Noboru; Goto, Takeji; Hirano, Itsuo; and Itakura, Yoichi, to Toyo Soda Manufacturing Co., Ltd. Apparatus for preparing metallic magnesium. 4,139,181, Cl. 266-148.000.

Kawano, Hideo; Mitsugi, Sadahiko; Dietrich, Oelhschlagel; and Yamaji, Kenkichi, to Hitachi Cable, Ltd. Liquid pressure extrusion method and device for tube or tubular member. 4,138,871, Cl. 72-60.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; and Takada, Toshiyuki, 4,138,971, Cl. 123-59.0BS.

Kawashima, Hiroyuki: *See*—
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuki; and Maruyama, Mikio, 4,139,180, Cl. 266-69.000.

Kayhko, Jussi J.: *See*—
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,139,371, Cl. 75-73.000.

Keasler, Sydney J.: *See*—
Cantrell, Steven M.; and Keasler, Sydney J., 4,139,332, Cl. 417-34.000.

KEF Electronics Limited: *See*—
Fincham, Lawrence R., 4,139,734, Cl. 179-1.00E.

Keller, Gary S.: *See*—
Clecak, Nicholas J.; Grant, Barbara D.; Jaffe, Annette B.; and Keller, Gary S., 4,139,276, Cl. 350-357.000.

Keller, John R. Ladder assembly. 4,139,078, Cl. 182-88.000.

Kellie, William J. Fishing float. 4,138,793, Cl. 43-43.130.

Kelly, Peter B.; and Pucci, Donald G., to General Electric Company. Bowling lane surface. 4,139,671, Cl. 428-211.000.

Kelly, Walter B.; and Pokorny, Frank J., to I-T-E Imperial Corporation. High voltage switch with molded support base. 4,139,747, Cl. 200-48.0KB.

Kennedy, Austin R. Q. Phone guard for locking out long-distance calls. 4,139,741, Cl. 179-90.00D.

Kennedy, Joseph P.: *See*—
Thaler, Warren A.; Buckley, Donald J.; and Kennedy, Joseph P., 4,139,695, Cl. 526-308.000.

Kentosh, James M., to Amtel, Inc. Removable fluid swivel for mooring terminals. 4,138,751, Cl. 9-8.00P.

Kepler, C. Edward; and Guile, Roy N., to United Technologies Corporation. Single nozzle free-vortex aerodynamic window. 4,138,777, Cl. 29-157.00C.

Kera, Masakazu: *See*—
Hayama, Noboru; Hasegawa, Takanori; Takehara, Kiyoshi; and Kera, Masakazu, 4,139,759, Cl. 219-216.000.

Keranen, John J.: *See*—
Hastings, Jerome K.; and Keranen, John J., 4,139,755, Cl. 200-295.000.

Kerb, Ulrich: *See*—
Furst, Andor; Gutzwiller, Jurg A. W.; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,139,716, Cl. 560-257.000.

Kerr, Edwin R.: *See*—
Dorawala, Tansukhlal G.; Kerr, Edwin R.; Kochis, Robert G.; and Koniz, Leon F., 4,139,491, Cl. 252-440.000.

Kersten, Ralf; and Witte, Hans-Hermann, to Siemens Aktiengesellschaft. Light distributor for optical communication systems. 4,139,259, Cl. 350-96.160.

Kewpie Kabushiki Kaisha: *See*—
Fujii, Noriomi, 4,138,940, Cl. 99-636.000.

Keyt, Ferris G.; and Silverman, Harold, to Pitney-Bowes, Inc. Feeding and shingling apparatus. 4,139,190, Cl. 271-183.000.

Kikumoto, Hyogi: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.

Kilbourn, Edward E.; Weiler, Ernest; and Weir, William D., to Rohm and Haas Company. Anthelmintic phosphonamidate and phosphoramidate compositions and methods of use. 4,139,614, Cl. 424-211.000.

Kim, Leo; and Paxson, Timm E., to Shell Oil Company. Secondary alcohol ethoxylate process. 4,139,566, Cl. 568-679.000.

Kim, Yong K.: *See*—
Kohler, John J.; Gautney, Joe; Kim, Yong K.; and McCullough, John F., 4,139,597, Cl. 423-243.000.

Kinkade, Franklin C.: *See*—
Holz, William L.; Kinkade, Franklin C.; and Robbins, Fred, 4,139,593, Cl. 264-333.000.

Kinneman, Thomas F.: *See*—
Solomon, Jack; and Kinneman, Thomas F., 4,139,375, Cl. 75-224.000.

Kioritz Corporation: *See*—
Harada, Tatsuzo; and Kobayashi, Torao, 4,138,813, Cl. 30-387.000.

Kipp, Carl E., Jr., to Paygro, Inc. Method of effecting the aerobic thermophilic decomposition of organic waste materials. 4,139,640, Cl. 426-55.000.

Kirpichnikova, Zinaida F.: *See*—
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G., 4,139,557, Cl. 260-561.00R.

Kirsch, Thomas S., to Gould Inc. Resistance temperature sensor. 4,139,833, Cl. 338-308.000.

Kirschner, Jurgen; Klapp, Helmut; Rompeltien, Rainer; and Zajicek, Otmar, to Wacker-Chemie GmbH. Valve for the introduction of gas. 4,139,585, Cl. 261-64.00R.

Kishi, Hirotoshi: *See*—
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.

Kita, Yasushi: *See*—
Watanabe, Nobuatsu; and Kita, Yasushi, 4,139,474, Cl. 252-1.000.

Kitabayashi, Seiichi. Reciprocating motors. 4,138,845, Cl. 60-325.000.

Kitagawa, Hiroshi, to Kabushiki Kaisha Kawaigakki. Key assignor. 4,138,916, Cl. 84-1.010.

Kitagawa, Hiroshi: *See*—
Sakashita, Noriji; and Kitagawa, Hiroshi, 4,138,917, Cl. 84-1.010.

Kitamura, Shuji. Apparatus for producing three-dimensionally formed crackers. 4,138,938, Cl. 99-353.000.

Kitovich, Vsevolod V.; Strakhov, Valentin G.; Popov, Jury M.; Plotnikov, Anatoly F.; and Seleznev, Vladimir N. Optoelectronic memory. 4,139,909, Cl. 365-125.000.

Klaar, Jurgen, to Kraftwerk Union Aktiengesellschaft. Method and device for measuring moisture in electric machines. 4,139,057, Cl. 165-107.00R.

Klapp, Helmut: *See*—
Kirschner, Jurgen; Klapp, Helmut; Rompeltien, Rainer; and Zajicek, Otmar, 4,139,585, Cl. 261-64.00R.

Klaue, Hermann. Disk brake assembly for vehicle wheels. 4,139,081, Cl. 188-18.00A.

Klauke, Erich: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,615, Cl. 424-216.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,636, Cl. 424-322.000.

Klemann, Lawrence P.; Newman, Gerald H.; and Stogryn, Eugene L., to Exxon Research & Engineering Co. Electrochemical cells having alkali metal anodes and electrolyte salt complex compositions including haloorganometallic alkali metal salt complexes. 4,139,681, Cl. 429-191.000.

Klesper, Hugo: *See*—
Busse, Oswald; and Klesper, Hugo, 4,139,091, Cl. 198-732.000.

Klinger, Lance T., to Xerox Corporation. Method and means for increasing the stiffness of limited frequency servo systems. 4,139,811, Cl. 318-615.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Adams, Heribert, 4,139,063, Cl. 172-9.000.

Klock, James A., to Monsanto Company. Process for the preparation of bicyclothiadiazinones. 4,139,700, Cl. 544-10.000.

Klose, Robert E.: *See*—
Bahoshy, Bernard J.; and Klose, Robert E., 4,139,639, Cl. 426-3.000.

Knight, Frank W.: *See*—
Stella, Joseph A.; and Knight, Frank W., 4,139,284, Cl. 352-130.000.

Knohl, Kenneth F., to Logansport Machine Co., Inc. High speed chuck. 4,139,206, Cl. 279-1.00C.

Knorr-Bremse GmbH: *See*—
Stauble, Georg; and Hintner, Josef, 4,139,239, Cl. 303-82.000.

Knotik, Karl; Leichter, Peter; and Jakusch, Heinz, to Vereinigte Edelstahlwerke Aktiengesellschaft. Method of preparing solid radioactive or toxic waste for long-term storage. 4,139,488, Cl. 252-301.10W.

Kobayashi, Fumio; and Ban, Nobuaki, to Sansui Electric Co., Ltd. Loudspeaker device. 4,139,075, Cl. 181-148.000.

Kobayashi, Hidehiko: *See*—
Ogata, Takashi; Arakawa, Tatsumi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,139,288, Cl. 354-7.000.

Kobayashi, Makiko: *See*—
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.

Kobayashi, Nobuki: *See*—
Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, 4,139,672, Cl. 428-323.000.

Kobayashi, Torao: *See*—
Harada, Tatsuzo; and Kobayashi, Torao, 4,138,813, Cl. 30-387.000.

Kobetsky, Robert G., to Illinois Tool Works Inc. Adhesive fastener article. 4,139,408, Cl. 156-380.000.

Koch, Karl H.: *See*—
Glaser, Josef; Koch, Karl H.; and Kurth, Johannes, 4,139,050, Cl. 164-437.000.

Koch, Russell W.: *See*—
Lohr, Delmar F., Jr.; Koch, Russell W.; and Schulz, Donald N., 4,139,523, Cl. 260-45.75W.

Kochis, Robert G.: *See*—
Dorawala, Tansukhlal G.; Kerr, Edwin R.; Kochis, Robert G.; and Koniz, Leon F., 4,139,491, Cl. 252-440.000.

Kochums Industri Aktiebolag: *See*—
Bystedt, Nils T.; and Lundin, Karl B., 4,139,035, Cl. 144-312.000.

Kockums Construction AB: *See*—
Henryson, Leif A., 4,139,185, Cl. 266-226.000.

Kohler, John J.; Gautney, Joe; Kim, Yong K.; and McCullough, John F., to Tennessee Valley Authority. Removal and recovery of sulfur oxides from gas streams with melamine. 4,139,597, Cl. 423-243.000.

Kohler, Kurt, to Carl Zeiss-Stiftung. Head rest for ophthalmological examination. 4,139,280, Cl. 351-38.000.

Kohlhaupt, Reinhold: *See*—
Schweckendiek, Walter; Hiller, Heinrich; and Kohlhaupt, Reinhold, 4,139,543, Cl. 260-381.000.

Koizumi, Toshimichi, to Olympus Optical Co., Ltd. Medium magnification objective for video disks. 4,139,266, Cl. 350-220.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Isago, Takao; and Komazaki, Tomokazu, 4,139,829, Cl. 333-28.00R.
Kolesar, Mark; and Rettger, Harry C., to Westinghouse Electric Corp. Adjustable cone member for electrical coil formation. 4,138,874, Cl. 72-306.000.
Kollensperger, Friedrich-Gero; Hartleben, York; Kretzschmar, Rolf; and Neteler, Bernhard, to Nordmark-Werke GmbH. Oxazolidinones as therapeutic agents. 4,139,538, Cl. 260-307.00C.
Kollmeier, Hans-Joachim; and Rossmy, Gerd, to Th. Goldschmidt AG. Process for the production of high resilience polyurethane foams and foams produced therefrom. 4,139,503, Cl. 521-112.000.
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Dychkin, Mikhail M. Device for piece-by-piece delivery of storage-cell electrodes. 4,139,105, Cl. 214-8.50D.
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kalininskaya, Vera N. Method of forming cermet electrodes for alkaline accumulators. 4,139,422, Cl. 204-2.100.
Komaki, Shojiro; and Shimotsuma, Nobuo, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,138,841, Cl. 58-23.00R.
Komarenko, Taisia I.: *See—*
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G., 4,139,557, Cl. 260-561.00R.
Komatsu, Akio: *See—*
Inose, Fumiyuki; Endo, Hirohido; and Komatsu, Akio, 4,139,838, Cl. 340-703.000.
Komazaki, Tomokazu: *See—*
Isago, Takao; and Komazaki, Tomokazu, 4,139,829, Cl. 333-28.00R.
Kominami, Yasuo: *See—*
Ienaka, Masanori; and Kominami, Yasuo, 4,139,738, Cl. 179-15.0BT.
Komiya, Yutaka: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.
Komorniczyk, Klaus: *See—*
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.
Kondo, Kaneichi, to Matsushita Electric Industrial Co., Ltd. High voltage generating device. 4,139,792, Cl. 310-339.000.
Konishi, Hiromu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for operating a parking brake. 4,138,905, Cl. 74-577.00R.
Konishiroku Photo Industry Co., Ltd.: *See—*
Sakurai, Kunio, 4,139,443, Cl. 204-192.00C.
Koniz, Leon F.: *See—*
Dorawala, Tansukhlal G.; Kerr, Edwin R.; Kochis, Robert G.; and Koniz, Leon F., 4,139,491, Cl. 252-440.000.
Konno, Mitinobu: *See—*
Masaki, Kenji; Suzuki, Suzuo; and Konno, Mitinobu, 4,138,844, Cl. 60-286.000.
Kono, Makoto, to Victor Company of Japan, Ltd. Reel disc device in a recording and/or reproducing apparatus. 4,139,169, Cl. 242-201.000.
Kopineck, Hermann J.; and Bottcher, Wolfgang, to Hoesch Werke Aktiengesellschaft. Electrodynamic sound converter. 4,138,896, Cl. 73-643.000.
Korolis, Louis G., to Pullman Incorporated. Railway hopper car side door actuating mechanism. 4,138,948, Cl. 105-251.000.
Koroly, James S.: *See—*
Dailey, George F.; and Koroly, James S., 4,138,873, Cl. 72-316.000.
Korotina, Raisa P.: *See—*
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
Korta, John, to Westinghouse Canada Limited. Vane tip motion transfer device. 4,139,329, Cl. 415-161.000.
Kosan Crisplant A/S: *See—*
Olesen, Poul A., 4,139,088, Cl. 198-365.000.
Kotecha, Harish N.: *See—*
De la Moneda, Francisco H.; and Kotecha, Harish N., 4,138,782, Cl. 29-571.000.
Koyanagi, Joji. Whip-type antenna which can slide-adjust the tuning frequency. 4,139,852, Cl. 343-903.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Klaar, Jurgen, 4,139,057, Cl. 165-107.00R.
Niemann, Hans-Joachim, 4,139,435, Cl. 204-157.10R.
Simon, Ulrich; Werner, Klaus-Dieter; Hoffmann, Dieter; and Pontani, Bernd, 4,139,413, Cl. 176-38.000.
Stunkel, Helmut, 4,139,420, Cl. 203-37.000.
Krasner, Fred C.; Graupe, Milton M.; and Zeuschner, Kenneth W., to Lern, Inc. Refillable ice dispensing apparatus. 4,139,126, Cl. 222-146.00C.
Kretzschmar, Rolf: *See—*
Kollensperger, Friedrich-Gero; Hartleben, York; Kretzschmar, Rolf; and Neteler, Bernhard, 4,139,538, Cl. 260-307.00C.
Krier, Keith N.; and Mason, Richard A., to Tennant Company. Surface maintenance machine drive and brush. 4,138,756, Cl. 15-83.000.
Krings, Josef. Bracing system glide shoe for trench sheeting equipment. 4,139,324, Cl. 405-282.000.
Krivakova, Miroslava: *See—*
Coupek, Jiri; Mikes, Otakar; Strop, Petr; and Krivakova, Miroslava, 4,139,684, Cl. 521-27.000.
Kronberger, Joseph A., Jr. Heating system. 4,139,152, Cl. 237-8.00R.
Krtek, Jan: *See—*
Cibulka, Josef; Hlousek, Jaroslav; Jelinek, Richard; Krtek, Jan; and Winkler, Jiri, 4,139,788, Cl. 307-350.000.
Krueger, Friedrich; and Michel, Walter, to Joh. A. Benckiser GmbH. Process of producing N,N-dimethylamino methane diphosphonic acid. 4,139,554, Cl. 260-502.500.
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P. Continuous casting withdrawal apparatus. 4,139,135, Cl. 226-166.000.
Krytar: *See—*
Russell, Thomas J., 4,139,827, Cl. 333-10.000.
Kuballa, Siegfried, to Siemens Aktiengesellschaft. Device for attaching flat strip cables to a printed circuit board. 4,139,727, Cl. 174-68.500.
Kubelka, Axel R., to TMC Corporation. Ski boot. 4,138,828, Cl. 36-121.000.
Kubesheski, John T.: *See—*
Goodney, Thomas O.; Johannsen, Donald O.; and Kubesheski, John T., 4,139,066, Cl. 172-803.000.
Kuehl, Ronald J., to Barber-Colman Company. Roughing gear shaper cutter. 4,139,327, Cl. 407-28.000.
Kuehn, Erich, to ICI Americas Inc. Polymerizable composition comprising a tetracarboxylic ester monomer useful for imparting flame retardance to resin polymers. 4,139,577, Cl. 260-871.000.
Kuehn, Rainhard: *See—*
Dennhoven, Manfred; Kunze, Claus; and Kuehn, Rainhard, 4,139,771, Cl. 250-408.000.
Kufner Textilwerke KG: *See—*
Hefele, Josef, 4,139,613, Cl. 427-197.000.
Kukulski, Zdzislaw. Hoisting apparatus. 4,139,179, Cl. 254-192.000.
Kumagae, Kimitaka: *See—*
Itoh, Kunio; Imai, Kiyoshi; Tanaka, Masaki; and Kumagae, Kimitaka, 4,139,519, Cl. 260-42.260.
Kuntz, Irving: *See—*
Gardiner, John B.; and Kuntz, Irving, 4,139,480, Cl. 252-51.50A.
Kunze, Claus: *See—*
Dennhoven, Manfred; Kunze, Claus; and Kuehn, Rainhard, 4,139,771, Cl. 250-408.000.
Kunzel, Werner: *See—*
Schwadtke, Karl; Weber, Rudolf; and Kunzel, Werner, 4,139,475, Cl. 252-8.600.
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, to Gutehoffnungshitte Sterkrade AG; and Siemens AG. Method of operating large turbo compressors. 4,139,328, Cl. 415-1.000.
Kupferberg, Alfred B., deceased: *See—*
Asculai, Samuel S.; Kupferberg, Alfred B., deceased; and Halpern, Meyer, coexecutor, 4,139,630, Cl. 424-283.000.
Kupferberg, Beatrice, coexecutor: *See—*
Asculai, Samuel S.; Kupferberg, Alfred B., deceased; and Halpern, Meyer, coexecutor, 4,139,630, Cl. 424-283.000.
Kurahashi, Keizo; Shimizu, Michihiro; Andoh, Shizuo; and Yoshikawa, Kazuo, to Fujitsu Limited. Method and apparatus for detecting the location of a light detecting pen on a gas discharge display panel. 4,139,803, Cl. 340-707.000.
Kureha Kagaku Kogyo Kabushika Kaisha: *See—*
Mizuno, Toshio; and Murakami, Heiichiro, 4,139,489, Cl. 252-411.00R.
Kureha, Takeshi; and Saeki, Taiichi, to Matsushita Electric Industrial Co., Ltd. Convergence device for color television receiver. 4,139,799, Cl. 315-13.00C.
Kuriyama, Shizuo: *See—*
Hirose, Noriyasu; and Kuriyama, Shizuo, 4,139,632, Cl. 424-247.000.
Kurkjian, Charles R.; and Peterson, George E., to Bell Telephone Laboratories, Incorporated. Analog computer. 4,139,895, Cl. 364-802.000.
Kurosaki, Tomihiro: *See—*
Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, 4,139,485, Cl. 252-135.000.
Kurosu, Tomio: *See—*
Ishiguro, Yasuo; and Kurosu, Tomio, 4,139,282, Cl. 352-91.00C.
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, to Teijin Limited. 1,3-Dicarbonyl compounds. 4,139,717, Cl. 562-460.000.
Kurth, Johannes: *See—*
Glaser, Josef; Koch, Karl H.; and Kurth, Johannes, 4,139,050, Cl. 164-437.000.
Kuwano, Satoshi: *See—*
Takayanagi, Takeo; Inoue, Mamoru; Kuwano, Satoshi; Minabe, Hitoshi; and Yabuzaki, Shunichi, 4,138,835, Cl. 53-474.000.
Kwasniewska-Rokicinska, Cecylia: *See—*
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.
Kwik-Kalk Corporation: *See—*
Vogel, W. Martin, Jr., 4,139,061, Cl. 168-41.000.
Kyokuto Boeki Kaisha Ltd.: *See—*
Ueno, Toshiyuki; Itoh, Isamu; and Morita, Yasuyuki, 4,139,320, Cl. 405-138.000.
Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Miyazaki, Yoshimasa; Matsumura, Shigeru; Yamauchi, Takayoshi; Harada, Morio; and Shimizu, Hisatoshi, 4,139,610, Cl. 424-72.000.
Labaw, Clifford S.; Webb, Robert L.; and Wellman, George R., to

SK&F Lab Co. Intermediates and processes useful for preparing medicinal agents imidazolemethylphosphonium salts. 4,139,708, Cl. 548-342.000.

Labaz: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; Eymard, Pierre; Werbenec, Jean-Pierre; and Broll, Madeleine, 4,139,634, Cl. 424-274.000.

Laboratoires Biotherax: *See—*
Raudnitz, Jean-Paul, 4,139,612, Cl. 424-128.000.

Laboratorio Farmacologico Milanese S.n.c.: *See—*
Fraschini, Mario, 4,138,889, Cl. 73-356.000.

Lacey, Raymond D.: *See—*
McGauran, Hugh K.; Saxon, John W. C.; Lacey, Raymond D.; and Summerlin, Frederick A., 4,138,921, Cl. 85-7.000.

Lackey, Robert S., to Westinghouse Electric Corp. Roof top air conditioning unit. 4,139,052, Cl. 165-59.000.

Lacroix, Guy: *See—*
Ducret, Jacques; Lacroix, Guy; and Gaulliard, Jean-Michel, 4,139,616, Cl. 424-222.000.

Laesser, Claude; Viennet, Rene; and Gharadjedaghi, Fereydoun, to Ebauches S.A. Electro-optic passive display device. 4,139,272, Cl. 350-337.000.

Laesser, Claude; Viennet, Rene; and Portmann, Hubert, to Ebauches S.A. Electronic instrument. 4,139,279, Cl. 350-334.000.

Laird, Jonathan L., Jr. Cleated chain wrench. 4,138,910, Cl. 81-67.00R.

Laliberte, Norman U., to American Optical Corporation. Colorless allyl diglycol carbonate articles. 4,139,694, Cl. 528-280.000.

La Lumiere, Edward J.: *See—*
Arzberger, William A.; and La Lumiere, Edward J., 4,139,125, Cl. 222-129.400.

Lamy, Jacques E., to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Device for positioning a submerged pipeline. 4,138,853, Cl. 405-171.000.

Landsman, Robert M., to LogEtronics, Inc. Protective system for a pneumatically actuated rotating body. 4,139,243, Cl. 308-9.000.

Lane, Parley C., Jr., to B. F. Goodrich Company, The. Vapor phase cracking of dicyclopentadiene and synthesis of 2,3-dihydroxycyclopentadiene and cyclopentene. 4,139,569, Cl. 260-666.00A.

Lane, Philip A.; and Brown, Bruce A., to Beecham Inc. Anesthetic lozenges. 4,139,627, Cl. 424-267.000.

Lang, Andre: *See—*
Marie, Gilbert; Lang, Andre; and Chapelet, Gilbert, 4,139,417, Cl. 252-51.50A.

Lang, David; and Lobanoff, Mark, to Irvin Industries Inc. Automobile rear compartment cover. 4,139,231, Cl. 296-37.160.

Langsford, Arthur W. Hammer type ignition system. 4,138,789, Cl. 42-65.000.

Lantos, Peter R., to Arco Polymers, Inc. Stabilized ethylene-carbon monoxide copolymers. 4,139,522, Cl. 260-45.75R.

Lapornik, Edward F., to Acuity Systems, Incorporated. Apparatus and method for measuring the vertex power of an optical system. 4,139,305, Cl. 356-125.000.

LaPorte, Gerald E.; Osterkorn, Charles L.; and Marino, Salvatore M., to Fedders Corporation. Solar heat collector. 4,138,997, Cl. 126-271.000.

Larchian, George A.: *See—*
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,139,401, Cl. 148-175.000.

Lariviere, Wilfred N.: *See—*
Anagnostis, Demetrius B.; and Lariviere, Wilfred N., 4,139,661, Cl. 427-401.000.

Larsen, Glen D.: *See—*
Carman, Richard W.; and Larsen, Glen D., 4,139,226, Cl. 292-285.000.

Larson, Robert W. Reclaiming system for scrap metals. 4,139,454, Cl. 209-12.000.

Larynogograph Limited: *See—*
Fourcin, Adrian J., 4,139,732, Cl. 179-1.0AL.

Lasater, Donald A.: *See—*
Taylor, Charles W.; Lasater, Donald A.; and Ebbesmeyer, Steven R., 4,139,032, Cl. 141-206.000.

Latviisky Gosudarstvenny Universitet Imeni P. Stuchki: *See—*
Rode, Oyars A., 4,139,820, Cl. 324-133.000.

Laws, Cecil A. Instrument for air ionization. 4,139,879, Cl. 361-230.000.

Lazarus, Stanley D.; and Chakravarti, Kalidas, to Allied Chemical Corporation. Production of thermally stabilized polyester. 4,139,521, Cl. 260-45.80A.

Leach, Paul A., to Jaffrey Fire Protection Company, Inc. Hose clamp for thin wall, high pressure fire hose. 4,139,224, Cl. 285-253.000.

Leclercq, Jacques: *See—*
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cosse-ment, Eric, 4,139,628, Cl. 424-271.000.

Leclercq, Jean-Pierre C. I. M.: *See—*
Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., 4,139,479, Cl. 252-8.800.

LeCraw, Roy C.: *See—*
Blank, Stuart L.; LeCraw, Roy C.; and Wolfe, Raymond, 4,139,905, Cl. 365-33.000.

Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, to Politechnika Gdanska. 1-Nitro-9-alkylaminoalkylaminoacridines and salts thereof. 4,139,531, Cl. 546-106.000.

Lee, Charles K.: *See—*
Carlson, F. Paul; and Lee, Charles K., 4,139,303, Cl. 356-39.000.

Lee, Dai-Woon: *See—*
Halmann, Martin M.; and Lee, Dai-Woon, 4,139,502, Cl. 423-139.000.

Lee, John W., Jr.: *See—*
Borror, Alan L.; Foley, James W.; and Lee, John W., Jr., 4,139,704, Cl. 544-135.000.

Lege, Ricky. Duck call. 4,138,800, Cl. 46-180.000.

Lehureau, Jean-Claude; and Bricot, Claude, to Thomson-Brandt. Optical device for projecting a radiation beam onto a data carrier. 4,139,263, Cl. 350-157.000.

Leichle, Claude, to Regie Nationale des Usines Renault; and Automobiles Peugeot. D.C. chopper control device for electric motors. 4,139,809, Cl. 318-341.000.

Leichter, Peter: *See—*
Knotik, Karl; Leichter, Peter; and Jakusch, Heinz, 4,139,488, Cl. 252-301.10W.

Leimgruber, Willy; and Valentine, Donald H., Jr., to Hoffmann-La Roche Inc. Process for the preparation of aldehydes. 4,139,720, Cl. 568-596.000.

Lekarev, Zinovy A.: *See—*
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.

L'Electronique Appliquee: *See—*
Robert, Andre; and Rouge, Jean, 4,138,894, Cl. 73-625.000.

Lemercier, Jacques: *See—*
Dubot, Guy; and Lemercier, Jacques, 4,139,802, Cl. 315-151.000.

Lengyel, Bela, to National Research Development Corporation. Method and apparatus for extrusion. 4,138,872, Cl. 72-262.000.

Lerdal, Duane A.: *See—*
Baum, Kurt; Lerdal, Duane A.; and Horn, Jerald S., 4,139,403, Cl. 149-88.000.

Lern, Inc.: *See—*
Krasner, Fred C.; Graupe, Milton M.; and Zeuschner, Kenneth W., 4,139,126, Cl. 222-146.00C.

Levenstein, Stanley, to Home Curtain Corp. Device for simultaneously stiffening and hemming drapery panels. 4,138,954, Cl. 112-155.000.

Lever Brothers Company: *See—*
Herrero, Francisco, 4,139,665, Cl. 428-35.000.

Levesque, Adelard, Jr., to United Technologies Corporation. Dynamic compensation for multi-loop controls. 4,139,887, Cl. 364-105.000.

Levi Strauss & Company: *See—*
Blessing, Hubert; and Ray, Ted M., 4,138,957, Cl. 112-287.000.

Levy, Jacques; and Viaud, Jean-Luc, to Commissariat a l'Energie Atomique. Bolted plate joint. 4,139,315, Cl. 403-19.000.

Lewis, Eugene W.: *See—*
Warden, Fuller; and Lewis, Eugene W., 4,138,816, Cl. 32-60.000.

Lewis, Paul H.: *See—*
Dorawala, Tansukhlal G.; Reinhard, Russell R.; and Lewis, Paul H., 4,139,496, Cl. 252-465.000.

Lewis, Terrence E.; and Abel, Kenneth N., to Burroughs Corporation. Semiconductor device package. 4,139,859, Cl. 357-72.000.

Lewison, Howard L., to Dynamics Corporation of America. Transport wheel assembly for implements. 4,139,065, Cl. 172-400.000.

Liberatore, Arthur: *See—*
Brosseau, Timothy L.; and Liberatore, Arthur, 4,138,923, Cl. 89-33.000D.

Liberman, Arthur L.: *See—*
Mussinan, Cynthia J.; Vock, Manfred H.; and Liberman, Arthur L., 4,139,649, Cl. 426-533.000.

Licina, George J.: *See—*
Roy, Prodyot; and Licina, George J., 4,139,421, Cl. 204-1.00T.

Liebermann, Leonard N., to Tif Instruments, Inc. Sightless bubble detector. 4,138,879, Cl. 73-19.000.

Liebl, Norbert: *See—*
Postler, Gunter; Furst, Wilhelm; Liebl, Norbert; and Rudenauer, Werner, 4,138,946, Cl. 102-210.000.

Light, Kenneth K.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with a tricyclic alcohol. 4,139,650, Cl. 426-538.000.

Liljenwall, James; and Moss, David, to Creative Ventures, Inc. Information entry system. 4,139,837, Cl. 340-146.3SY.

Lim, Gary; and Monkovic, Ivo, to Bristol-Myers Company. Process for the preparation of 14-hydroxymorphinan derivatives. 4,139,534, Cl. 546-74.000.

Lim-Holding, S.A.: *See—*
Schmidt, Oskar; and Sibral, Walter, 4,139,706, Cl. 548-305.000.

Limberg, Jaroslav, to Hutni projekt Praha, projekcni a inzenyrska organizace. Arrangement for dosing a coal charge to a coking battery. 4,139,419, Cl. 202-262.000.

Lin, Henry C., to Hooker Chemicals & Plastics Corp. Process for the preparation of thianthrene compounds. 4,139,516, Cl. 260-327.00P.

Linares, Raul F. Automatic automobile light control system. 4,139,801, Cl. 315-83.000.

Lindahl, Erik T.: *See—*
Ronnquist, Axel G.; Lindahl, Erik T.; and Stoilov, Nicolay S., 4,139,659, Cl. 427-249.000.

Lindenberger, William H.: *See—*
Pavlicius, Audrone M.; and Lindenberger, William H., 4,139,451, Cl. 208-39.000.

Linder, Sten V., to Aktiebolaget Atomenergi. Electromagnetic measurement of level and/or distance for electrically conducting liquid material. 4,138,888, Cl. 73-290.00R.

Lindmayer, Joseph, to Solarex Corporation. Solar panel with removable cell matrix, and method of making same. 4,139,399, Cl. 136-89.00H.

Linke, Norbert H. J., to S. T. DuPont. Hand luggage with multiple compartments. 4,139,084, Cl. 190-48.000.

Lion Fat & Oil Co., Ltd., The: *See—*
Kawakami, Akira; Ogoshi, Toshiaki; Aoki, Yoshio; and Honda, Masao, 4,139,498, Cl. 252-555.000.

Lippold, Hans-Martin: *See—*
Sauer, Hans; Lippold, Hans-Martin; and Spahrbier, Dieter, 4,139,683, Cl. 429-219.000.

Litman, Alan, to Smith & Wesson Chemical Company, Inc. Stop system for the focus of an optical instrument. 4,139,268, Cl. 350-255.000.

Little, John D.; and Cloud, James Z., Jr. Waterproof cast protector. 4,139,003, Cl. 128-82.000.

Litton Systems, Inc.: *See—*
Miller, Robert H.; Manus, Eugene A.; Walker, Herbert C.; and Brady, Sherwin L., 4,139,251, Cl. 339-5.00M.

Lobanoff, Mark: *See—*
Lang, David; and Lobanoff, Mark, 4,139,231, Cl. 296-37.160.

Lockery, Harry E.; and Ballou, Harold O., to Hottinger Baldwin Measurements, Inc. Transducer bridge circuit arrangement. 4,138,882, Cl. 73-767.000.

Loew, Gunther: *See—*
Jabs, Gert; and Loew, Gunther, 4,139,686, Cl. 521-121.000.

Loewe Anstalt: *See—*
Fehlmann, Hans-Beat, 4,139,670, Cl. 428-167.000.

Logan, Robert W., to Chimo Equipment Ltd. Drilling mud level monitor and alarm. 4,138,887, Cl. 73-151.000.

Logansport Machine Co., Inc.: *See—*
Knohl, Kenneth F., 4,139,206, Cl. 279-1.00C.

LogEtronics, Inc.: *See—*
Landsman, Robert M., 4,139,243, Cl. 308-9.000.

Lohr, Delmar F., Jr.; Koch, Russell W.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Stabilization of polyphosphazene vulcanizates with a metal complex. 4,139,523, Cl. 260-45.75W.

Lohse, Joseph M.: *See—*
Crowe, Norman P.; and Lohse, Joseph M., 4,138,836, Cl. 53-500.000.

Loland, Sven, to Santa Fe International Corp. Quick connect/disconnect coupling assembly. 4,139,222, Cl. 285-27.000.

Long, Elizabeth T.; and Long, Leonard L. Composite container having a plurality of removable sections. 4,139,114, Cl. 220-23.400.

Long, John H., to Sperry Rand Corporation. Locking mechanism for rake basket crank. 4,138,838, Cl. 56-377.000.

Long, Leonard L.: *See—*
Long, Elizabeth T.; and Long, Leonard L., 4,139,114, Cl. 220-23.400.

L'Oreal: *See—*
Kalopissis, Gregoire; and Manoussos, Georges, 4,139,635, Cl. 424-320.000.

Lorenz, Johann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft-Man. Flat solar collector. 4,138,991, Cl. 126-270.000.

Lorscheidt, Willy. Dispensing cartridge having an improved automatic filler stick positioning mechanism. 4,139,311, Cl. 401-55.000.

Louis Marx & Co., Inc.: *See—*
Cook, Calvin S.; and Merl, Carl J., 4,138,799, Cl. 46-86.00R.

Love, Mahlon L., to Deere & Company. Variable speed reversible drive for a harvesting apparatus. 4,138,837, Cl. 56-11.200.

Lucas Industries Ltd.: *See—*
Green, Alan C., 4,138,981, Cl. 123-139.0AQ.
Hunt, Peter, 4,139,789, Cl. 310-40.00R.

Luigi Stappani di P. Stappani & C.: *See—*
Ghelli, Giovanni, 4,139,460, Cl. 210-45.000.

Lumalampan AB: *See—*
Ronnquist, Axel G.; Lindahl, Erik T.; and Stoilov, Nicolay S., 4,139,659, Cl. 427-249.000.

Lundin, Karl B.: *See—*
Bystedt, Nils T.; and Lundin, Karl B., 4,139,035, Cl. 144-312.000.

Luria, David. Piston-type internal combustion engine. 4,138,973, Cl. 123-78.00B.

Luth, Claus-Peter, to Macchine Tessili Circolari Matec S.p.A. Circular knitting machine having a multiple selection system for the needles. 4,138,865, Cl. 66-219.000.

Luttner, George J. Weight for spectacle frame and method of attachment. 4,139,281, Cl. 351-111.000.

Lutz, Jean; and Besnard, Francois, to Societe Nationale Elf Aquitaine (Production). Method and apparatus to measure the rate of advance of a drilling tool on a floating drilling installation. 4,138,886, Cl. 73-151.000.

Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 4,139,520, Cl. 260-45.80N.

Lynghjem, Arne: *See—*
Fritzvold, Bjorn H.; Lynghjem, Arne; Johnsen, Oystein; and Eriksen, Leif H., 4,139,467, Cl. 210-97.000.

M.F.E., Inc.: *See—*
Walker, Richard L., 4,139,854, Cl. 346-76.00R.

M.U. Engineering & Manufacturing Inc.: *See—*
Sherlock, Hugh P., 4,138,803, Cl. 47-67.000.

Macabee, Lloyd C. Hydro-massage and pulsator apparatus. 4,139,001, Cl. 128-64.000.

Macchine Tessili Circolari Matec S.p.A.: *See—*
Luth, Claus-Peter, 4,138,865, Cl. 66-219.000.

Macken, John A.; and Palanos, Paul N. Laser engraved metal relief process. 4,139,409, Cl. 156-634.000.

Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, to Agrotechnika, narodny podnik. Method of and apparatus for purifying waste water. 4,139,457, Cl. 210-20.000.

Mackrle, Vladimir: *See—*
Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,139,457, Cl. 210-20.000.

Mader, Theodor: *See—*
Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, 4,139,351, Cl. 55-97.000.

Mages, Bernhard: *See—*
Rock, Erich; and Mages, Bernhard, 4,138,766, Cl. 16-145.000.

Magnetic Controls Company: *See—*
Castleman, Cordell V., 4,139,740, Cl. 179-81.00C.

Magneville, Pierre: *See—*
Cholet, Jacques; and Magneville, Pierre, 4,139,835, Cl. 340-12.00R.

Mahall, Karl: *See—*
Petzold, Manfred; Mahall, Karl; and Goebel, Irmhild, 4,139,553, Cl. 260-501.120.

Mahlein, Hans; and Winzer, Gerhard, to Siemens Aktiengesellschaft. Filter for a light wave in a light guiding fiber. 4,139,262, Cl. 350-96.330.

Major, Emery: *See—*
Rainin, Kenneth; and Major, Emery, 4,139,469, Cl. 210-136.000.

Makeev, Boris A.: *See—*
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.

Makipirtti, Simo A. I.; and Kayhko, Jussi J., to Outokumpu Oy. Process and device for suspension smelting of finely divided oxide and/or sulfide ores and concentrates, especially copper and/or nickel concentrates rich in iron. 4,139,371, Cl. 75-73.000.

Makuuchi, Keizo: *See—*
Araki, Kunio; Makuuchi, Keizo; Takagi, Tohru; and Nakayama, Hiroyuki, 4,139,437, Cl. 204-159.160.

Malm, Robert N.; and Cox, Charles W., to General Electric Company. Wedge-pin glass halogen lamp with transverse reference feature. 4,139,794, Cl. 313-220.000.

Mannesmann Aktiengesellschaft: *See—*
Glaser, Josef; Koch, Karl H.; and Kurth, Johannes, 4,139,050, Cl. 164-437.000.
Schulte, Franz-Josef, 4,138,925, Cl. 90-24.00B.

Manning, Harry F., to Textron Inc. Slide fastener having a reinforced separating end stop. 4,138,771, Cl. 24-205.11F.

Manokhin, Anatoly I.: *See—*
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.

Manoussos, Georges: *See—*
Kalopisssis, Gregoire; and Manoussos, Georges, 4,139,635, Cl. 424-320.000.

Manuccia, Thomas J.; and Geosling, Christine E., to United States of America, Navy. Hydrogen isotope separation. 4,139,439, Cl. 204-164.000.

Manus, Eugene A.: *See—*
Miller, Robert H.; Manus, Eugene A.; Walker, Herbert C.; and Brady, Sherwin L., 4,139,251, Cl. 339-5.00M.

Maple, James A.; and Jacobson, Conrad E., to Exxon Research & Engineering Company; and Exxon Production Research Company. Aboveground anchor support assembly for a pipeline. 4,139,142, Cl. 228-175.000.

Marano, Carlos J.; and Capisano, Enrique, to Seinhart, Manuel; and Seinhart, Norberto Esteban. Disposable toothbrush. 4,139,312, Cl. 401-176.000.

Marathon Steel Company: *See—*
Westhoff, James R.; Waight, Harry H.; and Glancy, John J., 4,139,087, Cl. 198-309.000.

Marie, Gilbert; Lang, Andre; and Chapelet, Gilbert, to Societe Nationale Elf Aquitaine. Lubricating oil compositions containing copolymers of olefins or of olefins and non-conjugated dienes with unsaturated derivatives of cyclic imides. 4,139,417, Cl. 252-51.50A.

Marine Exploration Limited: *See—*
Dickson, Peter G., 4,138,752, Cl. 9-8.00R.

Marino, Salvatore M.: *See—*
LaPorte, Gerald E.; Osterkorn, Charles L.; and Marino, Salvatore M., 4,138,997, Cl. 126-271.000.

Marked Money Systems, Inc.: *See—*
Herndon, George N., 4,139,219, Cl. 283-57.000.

Markwood, Samuel C.: *See—*
Berry, James W.; and Markwood, Samuel C., 4,139,094, Cl. 206-158.000.

Marley, William R. Portable heating and cooking stove. 4,138,985, Cl. 126-6.000.

Marmon, John C., Jr., to Water Save, Inc. Article for reducing the flow of water to a shower head. 4,139,022, Cl. 138-44.000.

Marquardt, Bernd F., to Medronik Systemtechnik GmbH. Recorder with driven paper supply in drawer. 4,139,855, Cl. 346-145.000.

Marshall, William J.: *See—*
Crabtree, Allen; Marshall, William J.; and Plant, David W., 4,139,345, Cl. 8-25.000.

Martin, Manuel I.: *See—*
Hermann, William G.; Martin, Manuel I.; and Meyer, Rolf, 4,138,931, Cl. 92-87.000.

Martin Marietta Corporation: *See—*
Albert, Joseph J., 4,139,170, Cl. 244-3.100.

Maruyama, Jiro; and Suzuki, Seiji, to Hakodate Seimo Sengu Co., Ltd. Method for making knot for fishing net. 4,139,225, Cl. 289-1.500.

Maruyama, Mikio: *See*—
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuki; and Maruyama, Mikio, 4,139,180, Cl. 266-69.000.
Maruzen Sewing Machine Co., Ltd.: *See*—
Matsumura, Nobuyoshi, 4,139,808, Cl. 318-269.000.
Marzoli, Angelo, to F. lli Marzoli & C. S.p.A. Method and apparatus for mounting and dismantling the resilient linings of pressure rollers employed in the drawing-systems of machines preparatory to spinning. 4,138,778, Cl. 29-235.000.
Masaki, Kenji; Suzuki, Suzuo; and Konno, Mitinobu, to Nissan Motor Company, Limited. System for reducing pollutants in engine exhaust gas. 4,138,844, Cl. 60-286.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft-Man: *See*—
Lorenz, Johann, 4,138,991, Cl. 126-270.000.
Mashio, Tasuku: *See*—
Ogawa, Toshio; Mashio, Tasuku; and Nishiyama, Hiroshi, 4,139,678, Cl. 428-432.000.
Mason, Richard A.: *See*—
Krier, Keith N.; and Mason, Richard A., 4,138,756, Cl. 15-83.000.
Massachusetts Institute of Technology: *See*—
Swartz, Mitchell R., 4,139,348, Cl. 23-232.00E.
Massey-Ferguson Inc.: *See*—
Burdette, Stephen D.; and Wenning, Michael L., 4,138,903, Cl. 74-473.00R.
Master Chemical Corporation: *See*—
Coward, Michael, 4,139,464, Cl. 210-74.000.
Masuda, Shinichi: *See*—
Matsunaga, Kinjiro; Masuda, Shinichi; Nakagawa, Yunosuke; and Tachibana, Kyozaburo, 4,139,509, Cl. 260-17.00R.
Masuko, Hitoshi: *See*—
Yoshida, Takeshi; Kameyama, Yukio; Masuko, Hitoshi; and Yaguchi, Keiichi, 4,139,871, Cl. 360-64.000.
Matcon Radgivende Ingeniorfirma ApS: *See*—
Andersen, Erik, 4,138,769, Cl. 17-73.000.
Matsufuji, Yoji: *See*—
Matsumoto, Seiichi; Tsunekawa, Tokuichi; Uchiyama, Takashi; Ayata, Naoki; Matsufuji, Yoji; and Ohkubo, Yukitoshi, 4,139,278, Cl. 350-332.000.
Matsui, Sei, to Nippon Kogaku K. K. Modified gauss type photographic lens. 4,139,265, Cl. 350-218.000.
Matsui, Takeshi; and Hinachi, Matatoyo, to Nippon Soken, Inc. Ultrasonic wave transmitter/receiver. 4,139,834, Cl. 340-1.00R.
Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Synchronizing signal generator. 4,139,257, Cl. 350-6.100.
Matsumoto, Seiichi; Tsunekawa, Tokuichi; Uchiyama, Takashi; Ayata, Naoki; Matsufuji, Yoji; and Ohkubo, Yukitoshi, to Canon Kabushiki Kaisha. Liquid crystal display device. 4,139,278, Cl. 350-332.000.
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Matsumura, Nobuyoshi, to Maruzen Sewing Machine Co., Ltd. Control apparatus for electrically driven sewing machine. 4,139,808, Cl. 318-269.000.
Matsumura, Shigeru: *See*—
Miyazaki, Yoshimasa; Matsumura, Shigeru; Yamauchi, Takayoshi; Harada, Morio; and Shimizu, Hisatoshi, 4,139,610, Cl. 424-72.000.
Matsunaga, Kinjiro; Masuda, Shinichi; Nakagawa, Yunosuke; and Tachibana, Kyozaburo, to Kao Soap Co., Ltd. Household starch composition prepared by emulsion-polymerizing a vinyl monomer in an aqueous solution of a polyvinyl alcohol and a nonionic starch or cellulose. 4,139,509, Cl. 260-17.00R.
Matsuo, Minoru; and Endo, Katutoshi, to Ricoh Company, Ltd. Electrophotographic sensitive material with rubber interlayer. 4,139,380, Cl. 96-1.50R.
Matsuoka, Tetsuo: *See*—
Shimizu, Teruo; and Matsuoka, Tetsuo, 4,139,881, Cl. 361-400.000.
Matsuoka, Tsutomu: *See*—
Takemoto, Yasunori; Matsuoka, Tsutomu; and Nakasumi, Tadataka, 4,138,974, Cl. 123-97.00B.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kondo, Kaneichi, 4,139,792, Cl. 310-339.000.
Kureha, Takeshi; and Saeki, Taiichi, 4,139,799, Cl. 315-13.00C.
Shimizu, Teruo; and Matsuoka, Tetsuo, 4,139,881, Cl. 361-400.000.
Takayanagi, Takeo; Inoue, Mamoru; Kuwano, Satoshi; Minabe, Hitoshi; and Yabuzaki, Shunichi, 4,138,835, Cl. 53-474.000.
Yamashita, Akio; and Hayami, Masaaki, 4,139,274, Cl. 350-357.000.
Matsushita Electric Works, Ltd.: *See*—
Shimada, Isao; and Akiba, Osamu, 4,139,737, Cl. 179-15.0AL.
Matumoto, Syuji: *See*—
Hiraoka, Nobuaki; and Matumoto, Syuji, 4,139,139, Cl. 228-102.000.
Maxey, Alexander R., to Arvin Industries, Inc. Method and apparatus for video signal recording. 4,139,873, Cl. 360-85.000.
Maxwell, Oral F., Jr.: *See*—
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,139,401, Cl. 148-175.000.
Maxwell, Richard F., Jr., to Westinghouse Electric Corp. Aircraft proximity warning indicator. 4,139,848, Cl. 343-6.0ND.
McCloskey, Albert R., to Heim Universal Corp., The. Vibration damping in machine element bearings. 4,139,245, Cl. 308-26.000.
McCrum, Eugene F.; Tomita, William K.; Myers, James G.; and Rehak, John T., to Ford Aerospace & Communications Corporation. Boresight method and apparatus. 4,139,769, Cl. 250-341.000.
McCulloch Corporation: *See*—
Zimmerer, John L.; and Brooks, John H., 4,138,812, Cl. 30-381.000.
McCullough, John F.: *See*—
Kohler, John J.; Gautney, Joe; Kim, Yong K.; and McCullough, John F., 4,139,597, Cl. 423-243.000.
McCurdy, Harold W., Jr.: *See*—
Weems, Sterling J.; and McCurdy, Harold W., Jr., 4,139,603, Cl. 423-580.000.
McDonald, Jack: *See*—
Fey, Maurice G.; Harvey, Francis J., II; and McDonald, Jack, 4,139,438, Cl. 204-164.000.
McDonnell Douglas Corporation: *See*—
Miller, Chester W.; and Herring, Ray N., 4,139,172, Cl. 244-45.00R.
McElroy, David J., to Texas Instruments Incorporated. Static memory cell with inverted field effect transistor. 4,139,785, Cl. 307-238.000.
McEwan, Malcolm W.; and Teekens, Marius B., to Shell Oil Company. Gas liquid separator. 4,139,352, Cl. 55-159.000.
McGauran, Hugh K.; Saxon, John W. C.; Lacey, Raymond D.; and Summerlin, Frederick A., to Aerpat A.G. Fastener. 4,138,921, Cl. 85-7.000.
McGraw-Edison Company: *See*—
Hurley, James E., 4,138,988, Cl. 126-194.000.
McGuigan, Marie. Bag for collecting waste material. 4,139,037, Cl. 150-11.000.
McKinney, David B.: *See*—
Eschenbach, Paul W.; Satterfield, Larry S.; McKinney, David B.; and Edge, Barry N., 4,138,764, Cl. 15-320.000.
McLaren, Edwin C., to Champion International Corporation. Sift proof carton. 4,139,119, Cl. 220-418.000.
McMillen, Kenneth G., deceased: *See*—
Ailshie, Roger H.; McMillen, Kenneth G., deceased; and McMillen, Leanne S., administrator, 4,139,021, Cl. 137-596.130.
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Ailshie, Roger H.; McMillen, Kenneth G., deceased; and McMillen, Leanne S., administrator, 4,139,021, Cl. 137-596.130.
McMillin, Danny L.; and Sirvet, Enn, to Coors Container Company. Continuous gravity fed can printer and transfer apparatus. 4,138,941, Cl. 101-40.000.
McMullan, James P.; and Stevens, Albert. Blanket heater with temperature control means. 4,139,763, Cl. 219-528.000.
McMurtry, David R., to Rolls-Royce Limited; and Renishaw Electrical Limited. Probe for use in measuring apparatus. 4,138,823, Cl. 33-174.00L.
McNeil, Harold L. Round trampoline with U-shaped leg. 4,139,192, Cl. 272-65.000.
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., to Rockwell International Corporation. Method of producing electrically isolated semiconductor devices on common crystalline substrate. 4,139,401, Cl. 148-175.000.
Mead Corporation, The: *See*—
Davis, Gerald T.; Schwab, Gerhart; and Shackle, Dale R., 4,139,218, Cl. 282-27.500.
Davis, Gerald T.; Schwab, Gerhart; and Shackle, Dale R., 4,139,392, Cl. 106-14.500.
Meador, David E. Snare drum attachment. 4,138,920, Cl. 84-415.000.
Medon, Mieczyslaw: *See*—
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.
Medronik Systemtechnik GmbH: *See*—
Marquardt, Bernd F., 4,139,855, Cl. 346-145.000.
Meeks, Dwight S. Convertible cushion. 4,138,742, Cl. 2-84.000.
Meininger, Fritz; Hunger, Klaus; and Springer, Hartmut, to Hoechst Aktiengesellschaft. Fiber reactive monoazo dyestuffs containing a $-SO_2-CH_2-CH_2-O-PO_3H_2$ group. 4,139,527, Cl. 260-199.000.
Meiss, James D.; and Cannon, Collins P., to United States of America, Energy. Ceramic end seal design for high temperature high voltage nuclear instrumentation cables. 4,139,724, Cl. 174-19.000.
Melles, Harold W., to International Harvester Company. Hydromechanical transmission with overspeed limited variable drive. 4,138,907, Cl. 74-687.000.
Memminger, Gustav: *See*—
Fecker, Josef; and Memminger, Gustav, 4,138,866, Cl. 66-132.00R.
Menegos, Pete J.: *See*—
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Menzel, Inc.: *See*—
Powell, Jack D.; and Schoellkopf, Jochem, 4,139,166, Cl. 242-66.000.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,139,535, Cl. 546-275.000.
Grier, Nathaniel; Dybas, Richard A.; and Strelitz, Robert A., 4,139,559, Cl. 260-563.00P.
Veber, Daniel F., 4,139,526, Cl. 260-112.50S.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See*—
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,139,642, Cl. 426-96.000.
Merl, Carl J.: *See*—
Cook, Calvin S.; and Merl, Carl J., 4,138,799, Cl. 46-86.00R.
Merrell Toraude et Compagnie: *See*—
Metcalf, Brian W.; and Jung, Michel, 4,139,563, Cl. 260-583.00H.
Merritt, John H., Jr.: *See*—
Thompson, Garris A.; and Merritt, John H., Jr., 4,138,969, Cl. 122-421.000.
Metal Box Limited: *See*—
Shutie, Orin S.; and Jenkins, Leonard A., 4,139,656, Cl. 427-47.000.

Metcalf, Brian W.; and Jung, Michel, to Merrell Toraude et Compagnie. α-acetylenic derivatives of amines. 4,139,563, Cl. 260-583.00H.
Meyer, Hans. Ski. 4,139,214, Cl. 280-607.000.
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Hermann, William G.; Martin, Manuel I.; and Meyer, Rolf, 4,138,931, Cl. 92-87.000.
Meyers, John J.: *See—*
Blair, Gerald E.; Shafer, John H.; Meyers, John J.; and Smith, Frank T. J., 4,139,677, Cl. 428-409.000.
Mezrich, Reuben S., to RCA Corporation. Switchable depth of focus pulse-echo ultrasonic-imaging display system. 4,138,895, Cl. 73-626.000.
MHA Corporation: *See—*
Miller, Milton J., 4,138,806, Cl. 52-149.000.
Michael, William R.: *See—*
Sundie, Richard D.; Michael, William R.; and Ulmer, Harry E., 4,139,507, Cl. 260-29.40R.
Michalowski, Joseph. Apparatus for handling disabled persons. 4,138,750, Cl. 5-89.000.
Michel, Jean-Georges, to Ebauches S.A. Integral resonant support arms for piezoelectric microresonators. 4,139,793, Cl. 310-353.000.
Michel, Walter: *See—*
Krueger, Friedrich; and Michel, Walter, 4,139,554, Cl. 260-502.500.
Micic, Ljubomir; Schat, Hermannus; Freyberger, Laurin C.; and Ullrich, Manfred F., to ITT Industries, Inc. Television receiver equipped for simultaneously showing several programs. 4,139,860, Cl. 358-22.000.
Mickelson, Grant A., to Union Oil Company of California. Silica-promoted hydrofining catalyst and process. 4,139,493, Cl. 252-455.00R.
Micro Peripherals, Inc.: *See—*
Owens, William M., 4,139,876, Cl. 360-97.000.
Mid-Iowa Concrete Products Company: *See—*
Holz, William L.; Kinkade, Franklin C.; and Robbins, Fred, 4,139,593, Cl. 264-333.000.
Mikes, Otakar: *See—*
Coupek, Jiri; Mikes, Otakar; Strop, Petr; and Krivakova, Miroslava, 4,139,684, Cl. 521-27.000.
Mikoshiba, Shigeta; and Oishi, Tomomichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration control bush assembly and method of making the same. 4,139,246, Cl. 308-26.000.
Miller, Chester W.; and Herring, Ray N., to McDonnell Douglas Corporation. Staggerwing aircraft. 4,139,172, Cl. 244-45.00R.
Miller, Milton J., to MHA Corporation; and Aluminum Plumbing Fixture Corp. Anchoring device for vehicles and other structures. 4,138,806, Cl. 52-149.000.
Miller, Robert H.; Manus, Eugene A.; Walker, Herbert C.; and Brady, Sherwin L., to Litton Systems, Inc. Wide band slip ring module. 4,139,251, Cl. 339-5.00M.
Miller, Roger D. String set and string securing apparatus for musical instruments. 4,138,919, Cl. 84-297.00R.
Milliken Research Corporation: *See—*
Eschenbach, Paul W.; Satterfield, Larry S.; McKinney, David B.; and Edge, Barry N., 4,138,764, Cl. 15-320.000.
Minabe, Hitoshi: *See—*
Takayanagi, Takeo; Inoue, Mamoru; Kuwano, Satoshi; Minabe, Hitoshi; and Yabuzaki, Shunichi, 4,138,835, Cl. 53-474.000.
Mink, George. Material handling apparatus. 4,139,104, Cl. 214-1.0BB.
Minnesota Mining and Manufacturing Company: *See—*
Hamilton, Richard M.; and Sievert, James A., 4,139,254, Cl. 339-122.00R.
Janssen, Edward W.; and Simpson, Jon H., 4,139,676, Cl. 428-402.000.
Thielen, James E., 4,138,804, Cl. 51-168.000.
Minolta Camera Co., Ltd.: *See—*
Tanaka, Atsuyuki, 4,139,898, Cl. 364-900.000.
Minolta Camera Kabushiki Kaisha: *See—*
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Matsumoto, Toshiaki, 4,139,295, Cl. 354-246.000.
Minoura, Kazuo, to Canon Kabushiki Kaisha. Lens having high resolving power. 4,139,267, Cl. 350-223.000.
Mississippi Chemical Corporation: *See—*
Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., 4,139,601, Cl. 423-396.000.
Mister Twister, Inc.: *See—*
Welle, Glen R., 4,138,795, Cl. 43-44.890.
Misu, Hiroshi: *See—*
Ikeda, Tomoaki; Misu, Hiroshi; Aotani, Yoshimasa; and Shinozaki, Fumiaki, 4,139,391, Cl. 96-115.00R.
Iwasaki, Masayuki; Misu, Hiroshi; and Miyano, Shizuo, 4,139,384, Cl. 96-33.000.
Mitec-Moderne Industrietechnik GmbH: *See—*
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Mitsubishi Chemical Industries Limited: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Itai, Kosaku; and Ueda, Yoshihiro, 4,139,752, Cl. 200-148.00R.
Ueki, Yasuo; and Nakayama, Masaaki, 4,139,810, Cl. 318-372.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Nakai, Yoshio; and Tateyama, Masamitsu, 4,139,691, Cl. 526-195.000.
Mitsugi, Sadahiko: *See—*
Kawano, Hideo; Mitsugi, Sadahiko; Dietrich, Oelhschlagel; and Yamaji, Kenkichi, 4,138,871, Cl. 72-60.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Itani, Mituo; Kawashima, Hiroyuki; Inoue, Takasuki; and Maruyama, Mikio, 4,139,180, Cl. 266-69.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
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Mitsui Petrochemical Industries Ltd.: *See—*
Inoue, Naofumi; Furukawa, Itsuro; and Usami, Toshio, 4,139,159, Cl. 239-547.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, 4,139,672, Cl. 428-323.000.
Yamamoto, Ryuichi; Hirai, Yutaka; and Nagata, Teruyuki, 4,139,562, Cl. 260-575.000.
Mittenzwei, Hellmut: *See—*
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Mittenzweig, Helmut: *See—*
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,139,611, Cl. 424-101.000.
Mitter & Co.: *See—*
Mitter, Mathias, 4,138,943, Cl. 101-119.000.
Mitter, Mathias, to Mitter & Co. Reinforced hose means for biasing a squeegee. 4,138,943, Cl. 101-119.000.
Miura, Shuzi: *See—*
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.
Miwa, Kishio; Inoue, Takehisa; and Tsunoi, Kazuo, to Toray Industries, Inc. 1-Alkyl-4-isopropylbenzene desorbents for para-xylene. 4,139,572, Cl. 260-674.0SA.
Miyakawa, Seiichi; and Tatsumi, Susumu, to Ricoh Company, Ltd. Auto-bias developing apparatus. 4,139,299, Cl. 355-10.000.
Miyano, Shizuo: *See—*
Iwasaki, Masayuki; Misu, Hiroshi; and Miyano, Shizuo, 4,139,384, Cl. 96-33.000.
Miyazaki, Yoshimasa; Matsumura, Shigeru; Yamauchi, Takayoshi; Harada, Morio; and Shimizu, Hisatoshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Permanent waving composition. 4,139,610, Cl. 424-72.000.
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Nagase, Toshiro; and Miyazawa, Hiroshi, 4,139,182, Cl. 267-120.000.
Mizuno, Toshio; and Murakami, Heiichiro, to Kureha Kagaku Kogyo Kabushika Kaisha. Method for reclaiming a used active carbon by applying electric current directly in parallel flow with carbon flow. 4,139,489, Cl. 252-411.00R.
Mizuno, Toshio: *See—*
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.
Moatti, Henri. Woodwork drilling and screwing machine. 4,138,773, Cl. 29-26.00R.
Mobay Chemical Corporation: *See—*
Zaganiacz, Frederick J., 4,139,517, Cl. 260-37.0PC.
Mobil Oil Corporation: *See—*
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,139,600, Cl. 423-329.000.
Yan, Tsoung-Yuan, 4,139,397, Cl. 106-278.000.
Mogi, Takao, to Sony Corporation. Ladderless D/A converter. 4,139,840, Cl. 340-347.0DA.
Mollon, Leslie, to Brooks & Perkins, Incorporated. Three-way tote baskets. 4,139,098, Cl. 206-507.000.
Monkovic, Ivo: *See—*
Lim, Gary; and Monkovic, Ivo, 4,139,534, Cl. 546-74.000.
Monpetit, Louis: *See—*
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Monsanto Company: *See—*
Howe, Robert K., 4,139,366, Cl. 71-94.000.
Kloek, James A., 4,139,700, Cl. 544-10.000.
Montagna, Angelo A.: *See—*
Beuther, Harold; and Montagna, Angelo A., 4,139,452, Cl. 208-107.000.
Montblanc-Simplo GmbH: *See—*
Herrnring, Heinz G., 4,139,424, Cl. 204-26.000.
Mookherjee, Braja D.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Goossens, Alfred E.; and Vock, Manfred H., 4,139,541, Cl. 260-345.80R.
Mooney, Gerald R.; and Mooney, Louis A. Adjustable load securement system for flat bed vehicles. 4,138,950, Cl. 105-482.000.
Mooney, Louis A.: *See—*
Mooney, Gerald R.; and Mooney, Louis A., 4,138,950, Cl. 105-482.000.
Moore, Donn F., to Computer Peripherals, Inc. Band welding fixture. 4,139,145, Cl. 228-212.000.
Moore, Harry O., to Combis, Chris, a part interest. Vending apparatus for newspapers and analogous articles. 4,139,120, Cl. 221-213.000.
Moore, Leonard M.: *See—*
Riese, John J.; Burton, Albert H.; and Moore, Leonard M., 4,138,965, Cl. 118-203.000.
Moore, Vernon S. Gage for setting sewing machine bobbin tension. 4,138,885, Cl. 73-141.0AB.
Moreau, Michele: *See—*
Karadavidoff, Isaac; Stjepanovic, Milorad; Moreau, Michele; and Rohrbach, Philippe, 4,139,631, Cl. 424-285.000.

Morenar S.A.: *See*—
Chiesa, Luigi, 4,139,292, Cl. 354-109.000.
Morgan, Cleon, to Donnelly Mirrors, Inc. Window assembly. 4,139,234, Cl. 296-84.00R.
Morikawa, Toshio; and Okabayashi, Keiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-open-position choke valve control system. 4,138,978, Cl. 123-119.00F.
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, to Takeda Chemical Industries, Ltd. Aralkyl carboxylic acid compounds. 4,139,545, Cl. 260-396.00R.
Morimoto, Kiyoshi: *See*—
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, 4,139,857, Cl. 357-15.000.
Morita, Yasuyuki: *See*—
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Morlock, Gerhard: *See*—
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Morrill, Justin S., Jr.; Farnbach, William A.; and Small, Charles T., to Hewlett-Packard Company. Logic state analyzer. 4,139,903, Cl. 364-900.000.
Morrissy, Joseph H.: *See*—
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Morsbach, Martin: *See*—
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Moses, Dudley K.: *See*—
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Moss, David: *See*—
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Mostura, Tiziano: *See*—
Bocca, Giuseppe; Mostura, Tiziano; and Valli, Bruno, 4,138,912, Cl. 83-69.000.
Motorola, Inc.: *See*—
Pypno, Thaddeus, 4,139,744, Cl. 179-167.000.
Ulmer, Richard W.; and Beutler, Robert R., 4,139,880, Cl. 361-246.000.
Mouchikhine, Paul: *See*—
Holecek, Rudolph; Mouchikhine, Paul; and Renault, Serge A., 4,139,358, Cl. 65-68.000.
Mowli, John C.; and Bala, Harry. Process for producing reclosable bags. 4,138,932, Cl. 93-35.0DS.
Muecke, Thomas W.; Cooke, Claude E., Jr.; and Gruesbeck, Clay, Jr., to Exxon Production Research Company. Selective wellbore isolation using buoyant ball sealers. 4,139,060, Cl. 166-281.000.
Mueller, Martin. Linear distortion measuring. 4,139,815, Cl. 324-57.00N.
Muller, Arnold. Cooling apparatus. 4,138,862, Cl. 62-508.000.
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, to Bayer Aktiengesellschaft. Novel transparent polyurethane polyureas for lamination of glazing materials. 4,139,674, Cl. 428-339.000.
Muller, Hans, to Grapha-Holding AG. Apparatus for converting a stream of sheets into discrete stacks. 4,139,191, Cl. 271-189.000.
Muller, Klaus-Peter: *See*—
Beschke, Helmut; Friedrich, Heinz; Muller, Klaus-Peter; and Schreyer, Gerd, 4,139,536, Cl. 546-317.000.
Muller, Marcel: *See*—
Furst, Andor; Gutzwiller, Jurg A. W.; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,139,716, Cl. 560-257.000.
Muller, Peter: *See*—
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,139,642, Cl. 426-96.000.
Multifold-International, Inc.: *See*—
Crowe, Norman P.; and Lohse, Joseph M., 4,138,836, Cl. 53-500.000.
Murakami, Heiichiro: *See*—
Mizuno, Toshio; and Murakami, Heiichiro, 4,139,489, Cl. 252-411.00R.
Murata Manufacturing Co., Ltd.: *See*—
Ogawa, Toshio; Mashio, Tasuku; and Nishiyama, Hiroshi, 4,139,678, Cl. 428-432.000.
Murfin Incorporated: *See*—
Reed, Robert W., 4,139,654, Cl. 427-44.000.
Murphy, Robert P. Load lift assembly for trucks. 4,139,109, Cl. 214-75.00R.
Murphy, Roger H.; and Racor Industries, Inc. Method of and means for oily water separation. 4,139,463, Cl. 210-73.00W.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Goossens, Alfred E.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Maltol-2-methyl pentenoates and organoleptic uses thereof. 4,139,541, Cl. 260-345.80R.
Mussinan, Cynthia J.; Vock, Manfred H.; and Liberman, Arthur L., to International Flavors & Fragrances Inc. Flavoring with a mixture of 4-terpinenol propionate and 2-methyl-3-furanthiol. 4,139,649, Cl. 426-533.000.
Myers, Harry K., Jr.; and Schneider, Abraham, to Sun Oil Company of Pennsylvania. Catalytic codimerization of norbornadiene with an acrylic acid ester. 4,139,715, Cl. 560-116.000.
Myers, Harry K., Jr.: *See*—
Schneider, Abraham; and Myers, Harry K., Jr., 4,139,714, Cl. 560-116.000.
Myers, James G.: *See*—
McCrum, Eugene F.; Tomita, William K.; Myers, James G.; and Rehak, John T., 4,139,769, Cl. 250-341.000.
Myers, William N.: *See*—
Hein, Leopold A.; and Myers, William N., 4,139,286, Cl. 353-3.000.
Myrens Verksted A/S: *See*—
Fritzvold, Bjorn H.; Lynghjem, Arne; Johnsen, Oystein; and Eriksen, Leif H., 4,139,467, Cl. 210-97.000.
Johnsen, Oystein, 4,139,411, Cl. 162-123.000.
Nabeshima, Yasuo: *See*—
Ninomiya, Yasumasa; Nabeshima, Yasuo; Sugiyama, Kengo; and Hibino, Yozo, 4,139,107, Cl. 214-40.000.
Nagai, Koichi; Ishikawa, Ryuji; Imamura, Koichi; Fujimura, Fumio; and Shiokoshi, Youhei, to Jujo Paper Co., Ltd. Recording paper with resin-containing recording layer and heat sensitive adhesion layer. 4,139,675, Cl. 428-349.000.
Nagai, Yohei; and Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument producing tones by variably mixing different waveshapes. 4,138,915, Cl. 84-1.220.
Nagaoka, Tateki: *See*—
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.
Nagase, Toshiro; and Miyazawa, Hiroshi, to Tokico Ltd. Spring device. 4,139,182, Cl. 267-120.000.
Nagata, Teruyuki: *See*—
Yamamoto, Ryuichi; Hirai, Yutaka; and Nagata, Teruyuki, 4,139,562, Cl. 260-575.000.
Naito, Michiru: *See*—
Goto, Nobutaka; and Naito, Michiru, 4,139,449, Cl. 204-270.000.
Nakagawa, Tadashi: *See*—
Kanbe, Yasuhide; Yamada, Shigemichi; Nakagawa, Tadashi; and Noguchi, Mitsuyuki, 4,139,085, Cl. 192-107.00R.
Nakagawa, Yunosuke: *See*—
Matsunaga, Kinjiro; Masuda, Shinichi; Nakagawa, Yunosuke; and Tachibana, Kyozaburo, 4,139,509, Cl. 260-17.00R.
Nakai, Yoshio; and Tateyama, Masamitsu, to Mitsubishi Rayon Co., Ltd. Polymer deposit inhibited process for emulsion polymerization of vinyl monomers. 4,139,691, Cl. 526-195.000.
Nakajima, Tatsutoshi: *See*—
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, 4,139,513, Cl. 260-29.6TA.
Nakamoto, Soichi: *See*—
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,139,289, Cl. 354-23.00D.
Nakane, Masami: *See*—
Hayashi, Masamichi; and Nakane, Masami, 4,139,297, Cl. 355-8.000.
Nakao, Toshiyuki; Kawai, Shunichi; and Yamaguchi, Hiroji, to Aisin Seiki Kabushiki Kaisha. Power distributing apparatus for vehicles. 4,138,906, Cl. 74-674.000.
Nakasumi, Tadataka: *See*—
Takemoto, Yasunori; Matsuoka, Tsutomu; and Nakasumi, Tadataka, 4,138,974, Cl. 123-97.00B.
Nakayama, Hiroyuki: *See*—
Araki, Kunio; Makuuchi, Keizo; Takagi, Tohru; and Nakayama, Hiroyuki, 4,139,437, Cl. 204-159.160.
Nakayama, Masaaki: *See*—
Ueki, Yasuo; and Nakayama, Masaaki, 4,139,810, Cl. 318-372.000.
Nalco Chemical Company: *See*—
Pavilcius, Audrone M.; and Lindenberger, William H., 4,139,451, Cl. 208-39.000.
Namba, Mutsusuke: *See*—
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.
Namiguchi, Yasuteru, to Toho Koki Kabushiki Kaisha. Cutting tool. 4,138,911, Cl. 82-72.000.
Narisada, Masayuki, to Shionogi & Co., Ltd. Dihydroethanoanthracene derivatives. 4,139,711, Cl. 560-8.000.
National Controls, Inc.: *See*—
Hanson, Harlan B.; and Rock, Frank C., 4,139,070, Cl. 177-200.000.
National Research Development Corporation: *See*—
Gerzon, Michael A., 4,139,729, Cl. 179-1.0GQ.
Lengyel, Bela, 4,138,872, Cl. 72-262.000.
Nicholson, Albert W., 4,138,784, Cl. 29-625.000.
Redman, John D.; and Wall, Michael R., 4,139,304, Cl. 356-358.000.
National Starch and Chemical Corporation: *See*—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,139,699, Cl. 536-109.000.
Schoenberg, Jules E., 4,139,693, Cl. 526-297.000.
Nauchno-Issledovatelsky Institut Avtomatizatsii Upravlenia I Proizvodstva Niiap: *See*—
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.
Nauta, Jelle G. Convertible wet/dry vacuum cleaner. 4,138,761, Cl. 15-353.000.
NCR Corporation: *See*—
Crepeau, Philip C.; and Kaino, Masami S., 4,139,149, Cl. 235-383.000.
Neal, Maynard J., to Buffalo Forge Company. Adjustable vane centrifugal pump impeller construction. 4,139,330, Cl. 416-87.000.
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G.

Method of preparing dimethylacetamide in presence of MoO_3 catalyst. 4,139,557, Cl. 260-561.00R.

Needham, Barbara: *See—*
Crossland, William A.; Morrissy, Joseph H.; and Needham, Barbara, 4,139,273, Cl. 350-340.000.

Nelsen, Roger J., to Gulf & Western Manufacturing Company. Article transfer mechanism. 4,139,090, Cl. 198-740.000.

Nelson, Marguerite D. Portable, collapsible table. 4,138,951, Cl. 108-115.000.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl)-16-fluoro-PGE_2 compounds. 4,139,564, Cl. 260-586.00R.

Nelson, Richard L.: *See—*
Eckhart, Thomas D.; Nelson, Richard L.; and Hoglan, Jack M., 4,138,999, Cl. 128-2.00V.

Neri, Rudolph O.; and Topliss, John G., to Schering Corporation. Methods for the treatment of hirsutism. 4,139,638, Cl. 424-324.000.

Neteler, Bernhard: *See—*
Kollensperger, Friedrich-Gero; Hartleben, York; Kretzschmar, Rolf; and Neteler, Bernhard, 4,139,538, Cl. 260-307.00C.

New Jersey Zinc Company, The: *See—*
Bankowski, Richard S.; and Geary, Kermit E., 4,139,378, Cl. 75-247.000.

Newman, Gerald H.: *See—*
Klemann, Lawrence P.; Newman, Gerald H.; and Stogryn, Eugene L., 4,139,681, Cl. 429-191.000.

Newton, Robert P. Tire buffing machine system. 4,139,041, Cl. 157-13.000.

Nguyen, Nga Y.: *See—*
Chrambach, Andreas; and Nguyen, Nga Y., 4,139,440, Cl. 204-180.00G.

Nicholson, Albert W., to National Research Development Corporation. Method of making printed circuit board. 4,138,784, Cl. 29-625.000.

Niemann, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Method of separating isotopes. 4,139,435, Cl. 204-157.10R.

Nihon Karoraizu Kogyo Kabushiki Kaisha: *See—*
Ohmae, Yutaka, 4,139,673, Cl. 428-336.000.

Nikolaus, Heinrich J.: *See—*
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,139,642, Cl. 426-96.000.

Ninomiya, Yasumasa; Nabeshima, Yasuo; Sugiyama, Kengo; and Hibino, Yozo, to Hitachi, Ltd.; and Japanese National Railways. Spreader positioning apparatus for automatically grasping a handling article. 4,139,107, Cl. 214-40.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iyeta, Motoi, 4,139,200, Cl. 274-23.00A.
Nagai, Yohei; and Okamoto, Shimaji, 4,138,915, Cl. 84-1.220.

Nippon Hoso Kyokai: *See—*
Yoshida, Takeshi; Kameyama, Yukio; Masuko, Hitoshi; and Yaguchi, Keiichi, 4,139,871, Cl. 360-64.000.

Nippon Kogaku K. K.: *See—*
Matsui, Sei, 4,139,265, Cl. 350-218.000.

Nippon Oil Company, Ltd.: *See—*
Hayashi, Shigeyuki; Isobe, Masao; and Yamashita, Tadakazu, 4,139,511, Cl. 260-28.5AS.
Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,139,396, Cl. 106-243.000.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, 4,138,982, Cl. 123-148.00E.
Matsui, Takeshi; and Hinachi, Matatoyo, 4,139,834, Cl. 340-1.00R.

Nishida, Minoru: *See—*
Hattori, Tadashi; Nishida, Minoru; and Ueno, Yoshiki, 4,138,982, Cl. 123-148.00E.

Nishiyama, Hiroshi: *See—*
Ogawa, Toshio; Mashio, Tasuku; and Nishiyama, Hiroshi, 4,139,678, Cl. 428-432.000.

Nishiyama, Keisuke: *See—*
Hashimoto, Shigetoshi; and Nishiyama, Keisuke, 4,138,755, Cl. 15-77.000.

Nissan Motor Company, Limited: *See—*
Hoshino, Kazuo; and Tsunada, Naomasa, 4,139,083, Cl. 188-79.5GC.
Masaki, Kenji; Suzuki, Suzuo; and Konno, Mitinobu, 4,138,844, Cl. 60-286.000.
Otani, Shuichi, 4,139,255, Cl. 339-217.00S.

Nitanda, Hiroshi: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.

Niwa, Kazuo, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing semiconductor device. 4,138,781, Cl. 29-571.000.

Nobuhiro, Iizuka, to Glory Kogyo Kabushiki Kaisha. Paper supplying device in coin wrapping apparatus. 4,138,834, Cl. 53-212.000.

Noguchi, Mitsuyuki: *See—*
Kanbe, Yasuhide; Yamada, Shigemichi; Nakagawa, Tadashi; and Noguchi, Mitsuyuki, 4,139,085, Cl. 192-107.00R.

Noone, Thomas M.: *See—*
Rudner, Bernard; Noone, Thomas M.; and Pauly, Peter D., 4,139,501, Cl. 521-136.000.

Nordengren Patenter AB: *See—*
Nordengren, Rolf G. J., 4,139,465, Cl. 210-81.000.

Nordengren, Rolf G. J., to Nordengren Patenter AB. Method for washing filter-cakes and a spray nozzle intended for use with the method. 4,139,465, Cl. 210-81.000.

Nordmark-Werke GmbH: *See—*
Kollensperger, Friedrich-Gero; Hartleben, York; Kretzschmar, Rolf; and Neteler, Bernhard, 4,139,538, Cl. 260-307.00C.

Nordson Corporation: *See—*
Hastings, Donald R., 4,139,155, Cl. 239-708.000.
Rood, Alvin A., 4,139,160, Cl. 239-600.000.

Norling, Thomas B., to Akzona Incorporated. Central office coin repeater modification circuit. 4,139,736, Cl. 179-6.30R.

Norman Manufacturing Co., Inc.: *See—*
Hill, Loren G., 4,138,792, Cl. 43-42.240.

North American Philips Corporation: *See—*
Singer, Barry M.; and Thefaine, Yannick J., 4,139,444, Cl. 204-192.00E.

North American Specialties Corp.: *See—*
Seidler, Jack, 4,139,256, Cl. 339-258.00R.

Northern Telecom Limited: *See—*
Dearborn, Harold R., 4,138,785, Cl. 29-741.000.
Witkowicz, Tadeusz, 4,139,767, Cl. 250-214.00A.

Norton, James F., to General Electric Company. Television inspection system. 4,139,306, Cl. 358-106.000.

Notton, John H. F., to Johnson, Matthey & Co., Limited. Alloys of titanium. 4,139,373, Cl. 75-175.500.

Nowogrodzki, Markus, to RCA Corporation. Indicating temperature within living tissue. 4,138,998, Cl. 128-2.00H.

Noyes, Richard C.: *See—*
Giuggio, Nicholas; and Noyes, Richard C., 4,139,414, Cl. 176-86.00R.

Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co. Ltd. Indole cephalosporin derivatives. 4,139,703, Cl. 544-28.000.

Obayashi, Takashi: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.

Oberkirch, Wolfgang: *See—*
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,139,674, Cl. 428-339.000.

Obrowski, Frank, to Wigo Gottlob Widmann & Soehne GmbH & Co., KG. Household coffee machine with calcification indicator. 4,139,761, Cl. 219-308.000.

O'Connor, David. Metric gauge. 4,138,820, Cl. 33-168.00R.

Odenwalder, Heinrich; Puschel, Walter; and Stolzenburg, Rudolf, to AGFA-Gevaert AG. Dye diffusion transfer employing pyridine azo dye. 4,139,383, Cl. 96-29.00D.

Odenwalder, Heinrich: *See—*
von Konig, Anita; Odenwalder, Heinrich; Peters, Manfred; and Puschel, Walter, 4,139,387, Cl. 96-64.000.

Oertle, Donald H.: *See—*
Radd, Fred J.; and Oertle, Donald H., 4,139,814, Cl. 324-33.000.

Ogata, Takashi; Arakawa, Tatsumi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Microfilm typewriter. 4,139,288, Cl. 354-7.000.

Ogawa, Toshio; Mashio, Tasuku; and Nishiyama, Hiroshi, to Murata Manufacturing Co., Ltd. Piezoelectric crystalline films and method of preparing the same. 4,139,678, Cl. 428-432.000.

Ogden, S. Duane: *See—*
Riley, Donald E.; Graham, Kenneth A.; Scott, Ian J. C.; and Ogden, S. Duane, 4,139,583, Cl. 261-65.000.

Ogoshi, Toshiaki: *See—*
Kawakami, Akira; Ogoshi, Toshiaki; Aoki, Yoshio; and Honda, Masao, 4,139,498, Cl. 252-555.000.

Oharek, Frank J., to United States of America, Navy. Laser scan converter. 4,139,258, Cl. 350-6.800.

Ohkubo, Kazdo: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.

Ohkubo, Yukitoshi: *See—*
Matsumoto, Seiichi; Tsunekawa, Tokuichi; Uchiyama, Takashi; Ayata, Naoki; Matsufuji, Yoji; and Ohkubo, Yukitoshi, 4,139,278, Cl. 350-332.000.

Ohmae, Yutaka, to Nihon Karoraizu Kogyo Kabushiki Kaisha. Surface-coated blast furnace tuyere made of copper or copper alloy and method of surface-coating the same. 4,139,673, Cl. 428-336.000.

Ohsawa, Mitsuo, to Sony Corporation. Gain control circuit. 4,139,824, Cl. 330-254.000.

Ohshima, Noboru: *See—*
Torigoe, Yoshikazu; Ohshima, Noboru; Watanabe, Masaaki; and Okuya, Eitaro, 4,139,690, Cl. 526-174.000.

Oil Spill Recovery, Inc.: *See—*
Stagemeyer, Merlin D.; and Allcorn, Seth F., 4,139,470, Cl. 210-170.000.

Oishi, Tomomichi: *See—*
Mikoshiba, Shigeta; and Oishi, Tomomichi, 4,139,246, Cl. 308-26.000.

Okabayashi, Keiichi: *See—*
Morikawa, Toshio; and Okabayashi, Keiichi, 4,138,978, Cl. 123-119.00F.

Okamoto, Shimaji: *See—*
Nagai, Yohei; and Okamoto, Shimaji, 4,138,915, Cl. 84-1.220.

Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, to Mjtsubishi Chemical Industries Limited; and Okamoto, Shosuke. N^2-Naphthalenesulfonyl-L-arginine derivatives and the pharmaceutically acceptable acid addition salts thereof. 4,139,529, Cl. 260-239.0BC.

Okano, Shohei: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.

Okita, Yasuo: *See—*
Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, 4,139,672, Cl. 428-323.000.

Okuda, Allan S.: *See—*
Combs, L. Paul; Okuda, Allan S.; and Russell, Larry H., 4,138,986, Cl. 126-116.00R.

Okura, Takao: *See—*
Sakurai, Yoshitoshi; Okura, Takao; and Tanaka, Minoru, 4,138,843, Cl. 60-282.000.

Okuya, Eitaro: *See—*
Torigoe, Yoshikazu; Ohshima, Noboru; Watanabe, Masaaki; and Okuya, Eitaro, 4,139,690, Cl. 526-174.000.

Oldford, William G., to Huron Tool & Manufacturing Division of U.S. Industries, Inc. Method for fabricating pulleys. 4,138,776, Cl. 29-159.00R.

Olesen, Poul A., to Kosan Crisplant A/S. Conveyer of the tilt tray type. 4,139,088, Cl. 198-365.000.

Olin Corporation: *See—*
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,139,622, Cl. 424-250.000.

Olinkraft, Inc.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,139,146, Cl. 229-32.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,139,242, Cl. 308-6.00C.

Olsen, Richard P.: *See—*
Barrette, Richard P.; Glode, John B., Jr.; and Olsen, Richard P., 4,138,770, Cl. 24-16.0PB.

Olson, Dean A., Sr., to Rockford Acromatic Products Co. Universal joint cross with adjustable bearing cups. 4,138,863, Cl. 64-17.00A.

Olson, Shirley A. Clothesline clip for garment hangers. 4,139,174, Cl. 248-317.000.

Olympus Optical Co., Ltd.: *See—*
Koizumi, Toshimichi, 4,139,266, Cl. 350-220.000.
Osanai, Akira, 4,139,167, Cl. 242-189.000.

O'Neill, Gerald J.: *See—*
Simons, Charles W.; O'Neill, Gerald J.; and Gribens, Joel A., 4,139,607, Cl. 424-45.000.

Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Novel substituted amino-aromatic acetylenes and their method of preparation. 4,139,561, Cl. 260-575.000.

Orange Products, Inc.: *See—*
Gentile, Charles J., 4,139,127, Cl. 222-390.000.

Ordinartsev, Vladimir N.: *See—*
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.

Oregon Graduate Center: *See—*
Swanson, Lynwood W., 4,139,773, Cl. 250-423.00R.

Original Hanau Quarzlampen GmbH: *See—*
Ilzig, Karl F.; and Scheidemann, Hans, 4,139,883, Cl. 362-404.000.

Orlowski, Raymond, to Sun-Econ, Inc. Leak detector device. 4,138,856, Cl. 62-181.000.

Ortho Pharmaceutical Corp.: *See—*
Asculai, Samuel S.; Kupferberg, Alfred B., deceased; and Halpern, Meyer, coexecutor, 4,139,630, Cl. 424-283.000.

Ortlieb, Wolfgang; and Grossmann, Friedrich, to Georgii-Kobold August Heine KG. Control for electrical positioning drives. 4,139,831, Cl. 338-128.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Cassette tape recorder. 4,139,167, Cl. 242-189.000.

Osterkorn, Charles L.: *See—*
LaPorte, Gerald E.; Osterkorn, Charles L.; and Marino, Salvatore M., 4,138,997, Cl. 126-271.000.

Ostermann, Jerry L. Automatic sorting device for livestock. 4,138,968, Cl. 119-155.000.

Ostermayer, Franz: *See—*
Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,139,623, Cl. 424-251.000.

Ostermeier, Bruce H.; Haven, Duane A.; and Sletmoe, Gordon M., to Tektronix, Inc. Bistable storage target having interdigitated target electrode for selective erasure. 4,139,800, Cl. 315-13.0ST.

Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, to BASF Aktiengesellschaft. Separation of finely divided metal oxides, produced by combustion of metal carbonyls, from a stream of gas. 4,139,351, Cl. 55-97.000.

Otani, Shuichi, to Nissan Motor Company, Limited. Terminal pin holding block. 4,139,255, Cl. 339-217.00S.

Otis Engineering Corporation: *See—*
Gano, John C., 4,139,058, Cl. 166-85.000.

Otsuka, Tsuruo; and Zeilenga, Jacob J., to Verson Allsteel Press Company. Link drive mechanism for mechanical presses. 4,138,904, Cl. 74-570.000.

Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, to Nippon Oil Company, Ltd. Water-soluble coating composition for cathode-precipitating electrodeposition and process for its preparation. 4,139,396, Cl. 106-243.000.

Outokumpu Oy: *See—*
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,139,371, Cl. 75-73.000.

Overzet, John K.; and Studtmann, George H., to Borg-Warner Corporation. Fault protection circuit. 4,139,885, Cl. 363-58.000.

Owens-Illinois, Inc.: *See—*
Berry, James W.; and Markwood, Samuel C., 4,139,094, Cl. 206-158.000.

Owens, William M., to Micro Peripherals, Inc. Record ejecting and positioning assembly. 4,139,876, Cl. 360-97.000.

Oyama, Tadao, to Hitachi, Ltd. Panel positioning apparatus. 4,138,774, Cl. 29-25.190.

Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, to Mitsui Toatsu Chemicals, Inc. Process for forming a coating having a metallic finish. 4,139,672, Cl. 428-323.000.

Ozyagcilar, Mehmet N., to Rafel Industrial Group, Ltd., The. Catalyst for methane and ethane synthesis. 4,139,551, Cl. 260-449.60R.

P. R. Mallory & Co. Inc.: *See—*
Schlaikjer, Carl R., 4,139,680, Cl. 429-50.000.

Pacemaker Corporation: *See—*
Weitzman, Stewart, 4,138,814, Cl. 32-14.00B.

Palanos, Paul N.: *See—*
Macken, John A.; and Palanos, Paul N., 4,139,409, Cl. 156-634.000.

Palkovic, Victor, to Garden City Envelope Company. Envelope forming assemblies. 4,138,934, Cl. 93-63.00R.

Palmer, Ronald A.: *See—*
Griffith, Robert M.; Parkinson, Christopher; and Palmer, Ronald A., 4,139,455, Cl. 209-167.000.

Palumbo, Luigi; and Colletta, Angelo, to Centro Sperimentale Metallurgico S.p.A. Carbonaceous material with high characteristics of surface area and activity and process for producing the same. 4,139,416, Cl. 201-8.000.

Pankove, Jacques I., to RCA Corporation. Solar cell with a gallium nitride electrode. 4,139,858, Cl. 357-30.000.

Panzera, Carlino: *See—*
Erickson, Arnold R.; and Panzera, Carlino, 4,139,376, Cl. 75-229.000.

Papajewski, Reinhold, to Singer Company, The. Thread trimmer driving mechanism for sewing machines. 4,138,958, Cl. 112-292.000.

Parker, Ernest P., to Erect Pro, Inc. Pressure vessel safety interlock. 4,139,118, Cl. 220-316.000.

Parker-Hannifin Corporation: *See—*
Simmons, Harold C., 4,139,157, Cl. 239-400.000.

Parkinson, Christopher: *See—*
Griffith, Robert M.; Parkinson, Christopher; and Palmer, Ronald A., 4,139,455, Cl. 209-167.000.

Parkinson, Ronald; and Sinton, Richard A. Process of electrodeposition and product utilizing a reusable integrated cathode unit. 4,139,430, Cl. 204-108.000.

Parodi, Mario, to Ing. C. Olivetti & C., S.p.A. Portal-type precision measuring apparatus. 4,138,822, Cl. 33-174.00P.

Parrish, Robert M., to Reynolds Metals Company. Inductor for electromagnetic casting. 4,139,047, Cl. 164-147.000.

Parsons, Ronald, to Spencer Wright Industries, Inc. Tufting needle modular unit. 4,138,956, Cl. 112-226.000.

Parthasarathy, Shakkottai P.: *See—*
United States of America, National Aeronautics and Space Administration; and Parthasarathy, Shakkottai P., 4,139,291, Cl. 354-77.000.

Passavant-Werke Michelbache Hutte: *See—*
Busse, Oswald; and Klesper, Hugo, 4,139,091, Cl. 198-732.000.

Patchornik, Abraham: *See—*
Nudelman, Abraham; and Patchornik, Abraham, 4,139,703, Cl. 544-28.000.

Patterson, Bradley C., to Pyramid Manufacturing Company. Wheeled portable trailer substructure for elevatable drawworks, masts and setback tower. 4,138,805, Cl. 52-118.000.

Pauly, Peter D.: *See—*
Rudner, Bernard; Noone, Thomas M.; and Pauly, Peter D., 4,139,501, Cl. 521-136.000.

Pavilcius, Audrone M.; and Lindenberger, William H., to Nalco Chemical Company. Method for dewatering coke tar-water mixtures. 4,139,451, Cl. 208-39.000.

Paxson, Timm E.: *See—*
Kim, Leo; and Paxson, Timm E., 4,139,566, Cl. 568-679.000.

Paygro, Inc.: *See—*
Kipp, Carl E., Jr., 4,139,640, Cl. 426-55.000.

Payne, Bobby L.; and Iglehard, Hilary H. Cable string for downhole pumps. 4,139,334, Cl. 417-545.000.

Payne, Donald H., to Du Pont de Nemours, E. I., and Company. Fuel compositions containing synergistic mixtures of iron and manganese antiknock compounds. 4,139,349, Cl. 44-68.000.

Peeler, Donald H., to Sybron Corporation. Bleedable pressure system for measuring or testing. 4,139,000, Cl. 128-2.05G.

Peeters, Hugo K.: *See—*
Ghekiere, Jean-Pierre A.; and Peeters, Hugo K., 4,139,853, Cl. 346-1.000.

Pelcin, Albert L., to Eastern Company, The. Self-locking key-controlled door lock. 4,138,869, Cl. 70-151.00R.

Pellizzon, Tullio; Piccolo, Luigi; and Schwarz, Peter, to Euteco S.p.A. Process for preparing a red iron oxide pigment. 4,139,398, Cl. 106-304.000.

Pelta, Edmond R., to FMC Corporation. Method and apparatus for providing runout compensation. 4,138,825, Cl. 33-228.000.

Pelton & Crane Company: *See—*
Williams, James A.; and Jones, Arthur L., 4,138,815, Cl. 32-22.000.

Pena, Roberto E., Jr. Ladder furniture. 4,139,077, Cl. 182-35.000.

Pennsylvania Engineering Corporation: *See—*
Schempp, Eberhard G., 4,139,368, Cl. 75-52.000.

Pennwalt Corporation: *See—*
Cox, Robert J., 4,139,587, Cl. 264-123.000.

Penrod, Orville R.; and Fellows, Richard R., Jr., to Allen-Bradley Company. Packaged microcircuit and method for assembly thereof. 4,139,726, Cl. 174-52.0FP.

Pensabene, Saverio F.; and Catotti, Arthur J., to General Electric Company. Sintered negative plate. 4,139,423, Cl. 204-2.100.

Pepro: *See—*
Ducret, Jacques; Lacroix, Guy; and Gaulliard, Jean-Michel, 4,139,616, Cl. 424-222.000.

Peroy, Francois: *See—*
Fortin, Raymond; and Peroy, Francois, 4,138,901, Cl. 74-219.000.

Peters, Manfred: *See—*
von Konig, Anita; Odenwalder, Heinrich; Peters, Manfred; and Puschel, Walter, 4,139,387, Cl. 96-64.000.

Peterson, Dean M.; and Diddens, Paul A., to Honeywell Inc. Electrostatic recorder having a fixed head made up of a laminated stack of recording styli. 4,139,856, Cl. 346-163.000.

Peterson, George E.: *See—*
Kurkjian, Charles R.; and Peterson, George E., 4,139,895, Cl. 364-802.000.

Peterson, Wayne A., to Caterpillar Tractor Co. Pressure responsive check valve. 4,138,929, Cl. 91-446.000.

Petrini, Julian L.; Petrini, Madeline A.; Giacomotti, Richard A.; Giacomotti, Sally A.; and Slater, Ted L. Event monitor for court games. 4,139,764, Cl. 235-92.0GA.

Petrini, Madeline A.: *See—*
Petrini, Julian L.; Petrini, Madeline A.; Giacomotti, Richard A.; Giacomotti, Sally A.; and Slater, Ted L., 4,139,764, Cl. 235-92.0GA.

Petrolite Corporation: *See—*
Redmore, Derek; and Welge, Frederick T., 4,139,718, Cl. 260-567.60P.

Petrow, Vladimir: *See—*
Grunwell, Joyce F.; and Petrow, Vladimir, 4,139,617, Cl. 424-238.000.

Petzold, Manfred; Mahall, Karl; and Goebel, Irmhild, to Henkel Kommanditgesellschaft auf Aktien. Hydroxysulfobetaines and their use in antistatic finishing of synthetic fiber materials. 4,139,553, Cl. 260-501.120.

Peyser, Alan: *See—*
von Meister, William; and Peyser, Alan, 4,139,739, Cl. 179-18.00B.

Pfaffenbauer, Ludwig, to Etablissement Dentaire Ivoclar. Firing kiln, especially a vacuum firing kiln for dental ceramic purposes. 4,139,341, Cl. 432-184.000.

Pharmacia AB: *See—*
Yin, Ee T.; and Tangen, Oddvar, 4,139,415, Cl. 195-103.50R.

Phillips Petroleum Company: *See—*
Hanson, Donald O.; and Sherk, Fred T., 4,139,450, Cl. 208-11.0LE.
Snavely, Kenneth E., 4,139,666, Cl. 428-36.000.

Phillips-Van Heusen Corporation: *See—*
Weaver, Mark, 4,139,095, Cl. 206-278.000.

Piccolo, Luigi: *See—*
Pellizzon, Tullio; Piccolo, Luigi; and Schwarz, Peter, 4,139,398, Cl. 106-304.000.

Pickett, William H. Noise barrier. 4,138,947, Cl. 104-1.00R.

Pietsch, Joseph A., to General Electric Company. Split heat pump outdoor fan arrangement. 4,138,859, Cl. 62-324.000.

Pietzsch, Ing. Ludwig: *See—*
Huhne, Gerd; and Stolz, Hans-Peter, 4,139,241, Cl. 305-51.000.

Pigerol, Charles; de Cointet de Fillain, Paul; Eymard, Pierre; Werbenec, Jean-Pierre; and Broll, Madeleine, to Labaz. New indole derivatives and process for preparing the same. 4,139,634, Cl. 424-274.000.

Pilch, John S., to Ware Machine Service Inc. Fluid actuated apparatus. 4,138,928, Cl. 91-27.000.

Pilipenko, Vitaly A.: *See—*
Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., 4,139,446, Cl. 204-224.00R.

Pinfold, Brian E. Method of arc welding under water. 4,139,758, Cl. 219-74.000.

Pinseeker Corporation, The: *See—*
Riley, Edward J., 4,139,196, Cl. 273-164.000.

Piper, Helmut, to Sorg GmbH & Co. Kg. Method of inclusion melting glass with radioactive components, and furnace for carrying out such method. 4,139,360, Cl. 65-134.000.

Pires, Antonio, to Sperry Rand Corporation. Hair trimmer. 4,138,809, Cl. 30-200.000.

Pitney-Bowes, Inc.: *See—*
Keyt, Ferris G.; and Silverman, Harold, 4,139,190, Cl. 271-183.000.

Pitre, Davide: *See—*
Felder, Ernst; and Pitre, Davide, 4,139,605, Cl. 424-5.000.

Pittinger, Charles B., Jr.: *See—*
Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr., 4,138,810, Cl. 30-276.000.

Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr. Torsional vibration filament feed system. 4,138,810, Cl. 30-276.000.

Pittway Corporation: *See—*
Conforti, Frederick J., 4,139,846, Cl. 340-636.000.

Pitzel, Michael A. Reversible, multi purpose, multi stylable structure. 4,138,744, Cl. 2-192.000.

Plant, David W.: *See—*
Crabtree, Allen; Marshall, William J.; and Plant, David W., 4,139,345, Cl. 8-25.000.

Plotnikov, Anatoly F.: *See—*
Kitovich, Vsevolod V.; Strakhov, Valentin G.; Popov, Jury M.; Plotnikov, Anatoly F.; and Seleznev, Vladimir N., 4,139,909, Cl. 365-125.000.

Pogge, Hans B.: *See—*
Bondur, James A.; and Pogge, Hans B., 4,139,442, Cl. 204-192.00E.

Pohler, Klaus: *See—*
Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, 4,139,611, Cl. 424-101.000.

Pohrer, Harry H.; and Singler, Emil A. Humidifier. 4,139,762, Cl. 219-362.000.

Poirier, Armand C., to Emhart Industries, Inc. Lock cylinder plug stop. 4,138,870, Cl. 70-372.000.

Pokorny, Frank J.: *See—*
Kelly, Walter B.; and Pokorny, Frank J., 4,139,747, Cl. 200-48.0KB.

Poland, Sydney W., to Texas Instruments Incorporated. Calculator program security system. 4,139,893, Cl. 364-706.000.

Polard, Ronald J.; and Voorhies, John D., to American Cyanamid Company. Hydrotreating catalysts. 4,139,492, Cl. 252-433.000.

Polaroid Corporation: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,139,381, Cl. 96-3.000.
Borror, Alan L.; Foley, James W.; and Lee, John W., Jr., 4,139,704, Cl. 544-135.000.
Cook, Gerald H., 4,139,283, Cl. 352-104.000.
Stella, Joseph A.; and Knight, Frank W., 4,139,284, Cl. 352-130.000.
Stephens, Robert K., 4,139,382, Cl. 96-3.000.

Politechnika Gdanska: *See—*
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.

Pomey, Rene, to Ferag AG. Apparatus for counting printed products arriving upon a conveyor path in an imbricated product stream and method of operating such apparatus. 4,139,765, Cl. 235-92.0SB.

Ponce de Leon, Ronald R. Center locator. 4,138,824, Cl. 33-185.00R.

Pontani, Bernd: *See—*
Simon, Ulrich; Werner, Klaus-Dieter; Hoffmann, Dieter; and Pontani, Bernd, 4,139,413, Cl. 176-38.000.

Popov, Jury M.: *See—*
Kitovich, Vsevolod V.; Strakhov, Valentin G.; Popov, Jury M.; Plotnikov, Anatoly F.; and Seleznev, Vladimir N., 4,139,909, Cl. 365-125.000.

Porland, John: *See—*
Graversen, Niels P. G.; and Porland, John, 4,139,150, Cl. 236-1.00B.

Porter, Bill R.: *See—*
Field, David D.; Porter, Bill R.; and Porter, George D., 4,139,156, Cl. 239-121.000.

Porter, George D.: *See—*
Field, David D.; Porter, Bill R.; and Porter, George D., 4,139,156, Cl. 239-121.000.

Porter Manufacturing Corporation: *See—*
Field, David D.; Porter, Bill R.; and Porter, George D., 4,139,156, Cl. 239-121.000.

Portier, Jean L., to Soletanche. Method for measuring stresses or forces. 4,138,783, Cl. 29-606.000.

Portmann, Hubert: *See—*
Laesser, Claude; Viennet, Rene; and Portmann, Hubert, 4,139,279, Cl. 350-334.000.

Portz, Wilhelm: *See—*
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.

Post Office, The: *See—*
Huggins, Ernest E. J., 4,139,812, Cl. 320-7.000.

Postema, Pieter M.; and Gorissen, Adrianus M. J., to ITT Industries, Inc. Retractable shock absorber. 4,139,186, Cl. 267-64.00B.

Postler, Gunter; Furst, Wilhelm; Liebl, Norbert; and Rudenauer, Werner, to Diehl GmbH & Co. Ignition voltage generator for projectile detonators and the like. 4,138,946, Cl. 102-210.000.

Postupack, Dennis S.; and Allerton, David A., to PPG Industries, Inc. Solvent system for electrostatic shade band deposition process. 4,139,652, Cl. 427-14.000.

Powell, Jack D.; and Schoellkopf, Jochem, to Menzel, Inc. Surface wind batcher. 4,139,166, Cl. 242-66.000.

Power Climber Inc.: *See—*
Hippach, Wilburn L., 4,139,178, Cl. 254-175.500.

PPG Industries, Inc.: *See—*
Baughman, Glenn L.; and Stevens, Henry C., 4,139,578, Cl. 260-871.000.
Brodmann, George L.; and Moses, Dudley K., 4,139,357, Cl. 65-30.00R.
Johnson, Randall S.; and Wolfe, Terry L., 4,139,359, Cl. 65-107.000.
Postupack, Dennis S.; and Allerton, David A., 4,139,652, Cl. 427-14.000.

Pradal, Bortolo M., to RCA Corporation. Crystal overtone oscillator using cascade connected transistors. 4,139,826, Cl. 331-116.00R.

Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf: *See—*
Scherzer, Wolfgang; Woesthoff, Ekkehard; and Reuss, Oswald, 4,139,749, Cl. 200-61.540.

Princeton Electro Dynamics, Inc.: *See—*
Sanford, Robert F., 4,139,816, Cl. 324-72.000.
Principe, Peter P.: *See—*
Cohen, Jules B.; and Principe, Peter P., 4,138,880, Cl. 73-23.000.
Printz, Warren G., to Diamond International Corporation. Multi-ply continuous paper web former. 4,139,412, Cl. 162-276.000.
Process Engineering Company: *See—*
Sotirianos, Konstantin, 4,139,350, Cl. 55-42.000.
Procor Limited: *See—*
Tse, Samuel Y., 4,139,347, Cl. 23-293.00S.
Procter & Gamble Company, The: *See—*
Bailey, John; Cassie, Leslie H.; Sherrington, Paul R.; and van Roo, Paul, 4,139,486, Cl. 252-135.000.
Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., 4,139,479, Cl. 252-8.800.
Hix, Diana L.; Johnson, Charles L.; and Abner, Harold D., 4,139,643, Cl. 426-122.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Faron, Robert; and Cathala, Annie, 4,139,447, Cl. 204-239.000.
Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,139,093, Cl. 206-0.820.
Profio, Richard L.; and Borgman, Neil E., to Harnischfeger Corporation. Crawler shoe and method for making same. 4,139,240, Cl. 305-39.000.
Protective Treatments, Inc.: *See—*
Wenrick, Brian A., 4,139,664, Cl. 428-31.000.
Pruckmayr, Gerfried, to Du Pont de Nemours, E. I., and Company. Method for preparing copolyether glycols. 4,139,567, Cl. 568-613.000.
Pucci, Donald G.: *See—*
Kelly, Peter B.; and Pucci, Donald G., 4,139,671, Cl. 428-211.000.
Pucci, Gregory P.: *See—*
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Pullman Incorporated: *See—*
Gutridge, Jack E.; and Hallam, Keith J., 4,138,949, Cl. 105-315.000.
Korolis, Louis G., 4,138,948, Cl. 105-251.000.
Puschel, Walter: *See—*
Odenwalder, Heinrich; Puschel, Walter; and Stolzenburg, Rudolf, 4,139,383, Cl. 96-29.00D.
von Konig, Anita; Odenwalder, Heinrich; Peters, Manfred; and Puschel, Walter, 4,139,387, Cl. 96-64.000.
Pypno, Thaddeus, to Motorola, Inc. Reversible hand-held microphone. 4,139,744, Cl. 179-167.000.
Pyramid Manufacturing Company: *See—*
Patterson, Bradley C., 4,138,805, Cl. 52-118.000.
Quayle, Arthur: *See—*
Fishwick, Brian R.; and Quayle, Arthur, 4,139,528, Cl. 260-207.100.
Quick, George R.: *See—*
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Quiring, Bernd: *See—*
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,139,674, Cl. 428-339.000.
R & I Patent Corp.: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,139,310, Cl. 400-4.000.
R. O. Hull & Company, Inc.: *See—*
Eckles, William E.; and Willis, William J., 4,139,425, Cl. 204-43.00S.
Raasch, Hans: *See—*
Kamp, Heinz; and Raasch, Hans, 4,139,108, Cl. 214-41.00R.
Rabbani, Elazar S., to Enzo Bio Chem Incorporated. Nucleic acid and protein binding paper. 4,139,346, Cl. 422-56.000.
Rabus, Friedrich: *See—*
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Racor Industries, Inc.: *See—*
Murphy, Roger H.; and Racor Industries, Inc., 4,139,463, Cl. 210-73.00W.
Radd, Fred J.; and Oertle, Donald H., to Continental Oil Company. Method of detecting corrosion at interface of concrete and reinforcing steel using a hydrogen probe imbedded in the concrete. 4,139,814, Cl. 324-33.000.
Radzikowski, Czeslaw: *See—*
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.
Rafel Industrial Group, Ltd., The: *See—*
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Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, to American Cyanamid Company. Intermediates for synthesis of tetramisole, levamisole and their derivatives. 4,139,707, Cl. 548-320.000.
Rago, John J. Telescopic automatic fire extinguisher. 4,139,062, Cl. 169-37.000.
Rainin, Kenneth; and Major, Emery, to Altex Scientific, Inc. Fluid control mechanism. 4,139,469, Cl. 210-136.000.
Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Compositions stabilized with hindered piperidine carboxylic acids or metal salts thereof. 4,139,520, Cl. 260-45.80N.
Rasheed, Khalid; and Warkentin, James D., to Ansul Company, The. Biocidally-active 1,2,3-benzotrisulfides. 4,139,362, Cl. 71-90.000.
Rau, G.: *See—*
Stockel, Dieter, 4,139,140, Cl. 228-110.000.
Rau, Karl, to VDO Adolf Schindling AG. Liquid level indicating device. 4,139,750, Cl. 200-84.00R.
Raudnitz, Jean-Paul, to Laboratoires Biotherax. Process for making an aluminum phosphate gel. 4,139 612, Cl. 424-128.000.
Rauner, Frederick J.; Cunningham, Michael P.; and Van Hanehem, Richard C., to Eastman Kodak Company. Presensitized printing plate having a print-out image. 4,139,390, Cl. 96-91.00N.
Rautenbach, Willem L. Cyclotron and neutron therapy installation incorporating such a cyclotron. 4,139,777, Cl. 250-499.000.
Ray, Ted M.: *See—*
Blessing, Hubert; and Ray, Ted M., 4,138,957, Cl. 112-287.000.
Raymer, Jack D.: *See—*
Turner, Jesse H.; and Raymer, Jack D., 4,139,355, Cl. 62-324.000.
Raymond, Joseph H., Jr.; and Gudger, Keith H., to Texas Instruments Incorporated. Static MOS memory cell using inverted N-channel field-effect transistor. 4,139,786, Cl. 307-238.000.
Raymond, Theodore E., to Westinghouse Electric Corp. Swivel base for fuel assembly storage. 4,139,778, Cl. 250-507.000.
Razdymakha, Pavel S.: *See—*
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RCA Corporation: *See—*
Cohen, Seymour H.; and Fabula, Joseph J., 4,139,658, Cl. 427-93.000.
Mezrich, Reuben S., 4,138,895, Cl. 73-626.000.
Nowogrodzki, Markus, 4,138,998, Cl. 128-2.00H.
Pankove, Jacques I., 4,139,858, Cl. 357-30.000.
Pradal, Bortolo M., 4,139,826, Cl. 331-116.00R.
Risko, John J., 4,139,851, Cl. 343-17.500.
Rose, Albert, 4,139,796, Cl. 313-385.000.
Sauer, Donald J., 4,139,784, Cl. 307-221.00D.
West, Louis R., 4,139,900, Cl. 364-900.000.
Redifon Flight Simulation Ltd.: *See—*
Gasson, Roy A., 4,139,586, Cl. 264-544.000.
Redman, John D.; and Wall, Michael R., to National Research Development Corporation. Methods and apparatus for measuring variations in distance to a surface. 4,139,304, Cl. 356-358.000.
Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Polyvinyl quaternaries. 4,139,718, Cl. 260-567.60P.
Reed, Presley O. Gun rack. 4,139,100, Cl. 211-4.000.
Reed, Robert W., to Murfin Incorporated. Medallion-like articles, lamp lenses and method for their manufacture. 4,139,654, Cl. 427-44.000.
Reeder, Donald G. Saw guide apparatus. 4,138,914, Cl. 83-745.000.
Reeder, Willes W., to Sensormatic Electronics Corporation. Surveillance method and system with electromagnetic carrier and plural range limiting signals. 4,139,844, Cl. 340-572.000.
Reel, David A.: *See—*
Tsen, John B.; and Reel, David A., 4,139,756, Cl. 200-330.000.
Regan, Joseph P.: *See—*
Richmond, Kenneth D.; Hill, Jerry W.; Regan, Joseph P.; and Huber, Walter E., 4,139,406, Cl. 156-140.000.
Regan, Joseph R.; and Regan, Robert R. Screw starter. 4,139,036, Cl. 145-46.000.
Regan, Robert R.: *See—*
Regan, Joseph R.; and Regan, Robert R., 4,139,036, Cl. 145-46.000.
Regie Nationale des Usines Renault: *See—*
Fortin, Raymond; and Peroy, Francois, 4,138,901, Cl. 74-219.000.
Leichle, Claude, 4,139,809, Cl. 318-341.000.
Rehak, John T.: *See—*
McCrum, Eugene F.; Tomita, William K.; Myers, James G.; and Rehak, John T., 4,139,769, Cl. 250-341.000.
Reich, Shymon; and Friesem, Albert A., to Yeda Research and Development Company, Ltd. Holographic recording medium containing a 2-cyanoacrylate polymer. 4,139,388, Cl. 96-67.000.
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Dorawala, Tansukhlal G.; Reinhard, Russell R.; and Lewis, Paul H., 4,139,496, Cl. 252-465.000.
Reitsma, Jogchum, to U.S. Philips Corporation. Multi-digit arithmetic logic circuit for fast parallel execution. 4,139,894, Cl. 364-788.000.
Rejto, Thomas. Simultaneous heat transfer printing and embossing method. 4,138,945, Cl. 101-470.000.
Reliance Electric Company: *See—*
Steen, Charles R., 4,139,790, Cl. 310-156.000.
Renault, Serge A.: *See—*
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Renishaw Electrical Limited: *See—*
McMurtry, David R., 4,138,823, Cl. 33-174.00L.
Repka, Raymond R. Money belt. 4,139,133, Cl. 224-26.00C.
Republic Steel Corporation: *See—*
Griffith, Cecil B.; Thomas, Jerry D.; and Wiktorowski, Thomas A., 4,139,184, Cl. 266-220.000.
Research Technology, Inc.: *See—*
Henderson, David; and Digel, David B., 4,138,757, Cl. 15-100.000.
Rettger, Harry C.: *See—*
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Wolfe, Jerome K.; Hanks, Jack G.; and Rexroad, James O., 4,139,748, Cl. 200-50.0AA.
Reynard, Kennard A.; and Gerber, Arthur H., to Horizons Research Incorporated. Catalytic preparation of soluble poly(dichlorophosphazenes). 4,139,598, Cl. 423-300.000.

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Parrish, Robert M., 4,139,047, Cl. 164-147.000.
Rheem Manufacturing Company: *See*—
Cartland, William H., 4,138,996, Cl. 126-271.000.
Rice, Kenner C.: *See*—
Weiss, Ulrich; and Rice, Kenner C., 4,139,713, Cl. 560-116.000.
Richards, Frederick F., Sr. Replaceable cylinder padlock. 4,138,868, Cl. 70-38.00A.
Richardson-Merrell Inc.: *See*—
Grunwell, Joyce F.; and Petrow, Vladimir, 4,139,617, Cl. 424-238.000.
Richmark Camera Service, Inc.: *See*—
Aneshansley, James T.; Diebold, Gerard J.; and Thumim, Alfred I., 4,139,294, Cl. 354-217.000.
Richmond, Kenneth D.; Hill, Jerry W.; Regan, Joseph P.; and Huber, Walter E., to Dayco Corporation. Method of making banded belts. 4,139,406, Cl. 156-140.000.
Richter, Martin; and Busler, Albert, to Hilti Aktiengesellschaft. Safety disk assembly. 4,138,922, Cl. 85-62.000.
Ricoh Company, Ltd.: *See*—
Matsuo, Minoru; and Endo, Katutoshi, 4,139,380, Cl. 96-1.50R.
Miyakawa, Seiichi; and Tatsumi, Susumu, 4,139,299, Cl. 355-10.000.
Tani, Tatsuo, 4,139,298, Cl. 355-8.000.
Riedel, Tilo, to S.A. Etablissements Francois Salomon & Fils. Ski brake. 4,139,213, Cl. 280-605.000.
Riehm, Roger A., to Atlantic Richfield Company. C_8 Alkyl aromatic hydrocarbon isomerization by recycling benzene and toluene. 4,139,571, Cl. 260-668.00A.
Riese, John J.; Burton, Albert H.; and Moore, Leonard M., to American Can Company. Apparatus for delivering metered amounts of varnish to the surface of a can, or the like. 4,138,965, Cl. 118-203.000.
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Tapio, Olli; Veijonen, Lassi; and Riihinen, Kalevi, 4,139,410, Cl. 162-206.000.
Riley, Donald E.; Graham, Kenneth A.; Scott, Ian J. C.; and Ogden, S. Duane, to Chrysler Corporation. Throttle body assembly. 4,139,583, Cl. 261-65.000.
Riley, Edward J., to Pinseeker Corporation, The. Distance golf clubs. 4,139,196, Cl. 273-164.000.
Risko, John J., to RCA Corporation. Two level threshold circuit. 4,139,851, Cl. 343-17.500.
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Hayama, Noboru; Hasegawa, Takanori; Takehara, Kiyoshi; and Kera, Masakazu, 4,139,759, Cl. 219-216.000.
Rival Manufacturing Company: *See*—
Williams, James T., 4,138,936, Cl. 99-282.000.
Rizkalla, Nabil M., to Halcon Research & Development Corp. Process for extracting trivalent thallium values from aqueous solutions. 4,139,594, Cl. 423-112.000.
Robbins, Fred: *See*—
Holz, William L.; Kinkade, Franklin C.; and Robbins, Fred, 4,139,593, Cl. 264-333.000.
Robbins, Gordon B.: *See*—
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Robert, Andre; and Rouge, Jean, to L'Electronique Appliquee. Transversal acoustic wave operating device. 4,138,894, Cl. 73-625.000.
Robert Bosch GmbH: *See*—
Espenschied, Helmut, 4,138,983, Cl. 123-148.0DK.
Foerster, Hubert, 4,139,867, Cl. 360-10.000.
Grather, Gunter; and Rabus, Friedrich, 4,138,977, Cl. 123-117.00R.
Ziegler, Karl, 4,139,285, Cl. 352-194.000.
Roberts, Charles E., to E-Systems, Inc. Electromagnetic information display system. 4,139,841, Cl. 340-373.000.
Roberts, Herbert C. Boat loading and unloading device for automotive vehicles. 4,139,110, Cl. 214-450.000.
Robinson, James D., to Imperial Chemical Industries Limited. Container with reinforcing frame. 4,139,115, Cl. 220-74.000.
Roccaforte, Harry I., to Champion International Corporation. Tamper-proof dispensing carton. 4,139,121, Cl. 221-302.000.
Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft m.b.H. Hinge with a locking device. 4,138,766, Cl. 16-145.000.
Rock, Frank C.: *See*—
Hanson, Harlan B.; and Rock, Frank C., 4,139,070, Cl. 177-200.000.
Rockford Acromatic Products Co.: *See*—
Olson, Dean A., Sr., 4,138,863, Cl. 64-17.00A.
Rockwell International Corporation: *See*—
Chen, Thomas T., 4,139,906, Cl. 365-15.000.
Jones, Addison B.; and Fewer, William R., 4,139,051, Cl. 165-1.000.
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,139,401, Cl. 148-175.000.
Rode, Oyars A., to Latviisky Gosudarstvenny Universitet Imeni P. Stuchki. A.C. and D.C. voltage polarity indicator utilizing electrochromic cells. 4,139,820, Cl. 324-133.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, to U C B, Societe Anonyme. Amino-spiro[oxa(or thia)cycloalkane-penam]-carboxylic acid derivatives. 4,139,628, Cl. 424-271.000.
Rogers, Alfred N.; and Awerbuch, Leon, to Bechtel International Corp. Apparatus and method of geothermal energy conversion. 4,138,851, Cl. 60-641.000.
Rogers, Norman H., to Beecham Group Limited. Pseudomonic acid amide antibacterial compounds. 4,139,629, Cl. 424-283.000.
Rogols, Saul; and Salter, John W., to General Mills Chemicals, Inc. Enlarged granule starch stilt material for microencapsulated coatings. 4,139,505, Cl. 260-9.000.
Rohm GmbH: *See*—
Schroeder, Guenter, 4,139,685, Cl. 521-88.000.
Rohm and Haas Company: *See*—
Costin, Charles R., 4,139,459, Cl. 210-37.00R.
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Rohrbach, Philippe: *See*—
Karadavidoff, Isaac; Stjepanovic, Milorad; Moreau, Michele; and Rohrbach, Philippe, 4,139,631, Cl. 424-285.000.
Rohrback Corporation: *See*—
Holmes, Elmond A.; and Rohrback, Gilson H., 4,138,878, Cl. 73-15.00R.
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Rollmann, Louis D.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Synthesis of zeolite ZSM-5. 4,139,600, Cl. 423-329.000.
Rolls-Royce Limited: *See*—
McMurtry, David R., 4,138,823, Cl. 33-174.00L.
Roltra S.p.A.: *See*—
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Rompeltien, Rainer: *See*—
Kirschner, Jurgen; Klapp, Helmut; Rompeltien, Rainer; and Zajicek, Otmar, 4,139,585, Cl. 261-64.00R.
Ronnquist, Axel G.; Lindahl, Erik T.; and Stoilov, Nicolay S., to Lumalampan AB. Thin composite wire saw with surface cutting crystals. 4,139,659, Cl. 427-249.000.
Rontex America Inc.: *See*—
Dilo, Richard, 4,138,772, Cl. 28-110.000.
Rood, Alvin A., to Nordson Corporation. Spray nozzle having an improved seal. 4,139,160, Cl. 239-600.000.
Roper, Howard F., to Broken Hill Proprietary Company Limited, The. Vessel for carrying steel slabs. 4,138,961, Cl. 114-72.000.
Rosaen, Nils O. Differential fluid pressure indicating device. 4,139,466, Cl. 210-90.000.
Rosaen, Nils O. Fluid filtering device. 4,139,468, Cl. 210-130.000.
Rose, Albert, to RCA Corporation. Photoconductor for imaging devices. 4,139,796, Cl. 313-385.000.
Ross, Francis J.: *See*—
Dean, Albert J.; and Ross, Francis J., 4,139,428, Cl. 204-68.000.
Ross, Melvin A. Balanced crankshaft mechanism for the two piston Stirling engine. 4,138,897, Cl. 74-45.000.
Rossmy, Gerd: *See*—
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,139,503, Cl. 521-112.000.
Rostron, Joseph R.; Cromer, Charles F.; and Yuran, Paul J., to Westinghouse Electric Corp. Puffer-type compressed-gas circuit interrupter. 4,139,751, Cl. 200-148.00A.
Roth, Eldon N. Apparatus and method for forming meat patties. 4,138,768, Cl. 17-32.000.
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., to Olin Corporation. Method of controlling fungi using phthalazine compounds. 4,139,622, Cl. 424-250.000.
Rouchy, Maurice. Quinone derivatives useful as medicaments. 4,139,637, Cl. 424-323.000.
Rouge, Jean: *See*—
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Rowe, William A., to Zenith Radio Corporation. Color television screen and shadow mask assembly having increased tolerance to radial registration errors. 4,139,797, Cl. 313-408.000.
Rowland, Willis O. Combination hair styling/hair curling device. 4,139,014, Cl. 132-11.00A.
Roy, Prodyot; and Licina, George J., to General Electric Company. Method of determining oxygen content. 4,139,421, Cl. 204-1.00T.
Rozenberg, Vladimir M.: *See*—
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.
Rubin, Barry J.: *See*—
Anantha, Narasipur G.; Chang, Fung Y.; and Rubin, Barry J., 4,139,910, Cl. 365-183.000.
Rubright, Phillip L. Production of a dual-layer flow control device having improved bonding between layers. 4,139,590, Cl. 264-255.000.
Ruckdeschel, Frederick R., to Xerox Corporation. Cross mixer. 4,139,296, Cl. 355-3.0DD.
Rudenauer, Werner: *See*—
Postler, Gunter; Furst, Wilhelm; Liebl, Norbert; and Rudenauer, Werner, 4,138,946, Cl. 102-210.000.
Rudner, Bernard; Noone, Thomas M.; and Pauly, Peter D., to Tenneco Chemicals, Inc. Production of polyurethane foam of reduced tendency to form embers when burned. 4,139,501, Cl. 521-136.000.
Rudnick, Isadore: *See*—
Kanber, Hilda; Rudnick, Isadore; and Wang, Taylor G., 4,139,806, Cl. 318-116.000.
Rudolphy, Albert, to Hoechst Aktiengesellschaft. Printing ink binding agents. 4,139,500, Cl. 260-19.0UA.
Rudy, Erwin: *See*—
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Rumball, Kenneth F., to Airfix Industries Limited. Production of composite articles. 4,138,959, Cl. 113-1.00G.
Rumble Seat Corporation of America: *See*—
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Runyon, James R.: *See—*
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Ruoff, Carl F., Jr.; and Edmond, James J., to Bendix Corporation, The. Multi-axis load cell. 4,138,884, Cl. 73-133.00R.
Russell, John G.: *See—*
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Russell, Larry H.: *See—*
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Russell, Thomas J., to Krytar. High directivity TEM mode strip line coupler and method of making same. 4,139,827, Cl. 333-10.000.
Rust, Robert C.: *See—*
White, Philip E.; and Rust, Robert C., 4,139,886, Cl. 365-1.000.
Rutledge, Thomas F., to ICI Americas Inc. Oxidative coupling of alkylphenols catalyzed by metal complexes of polyimino acids. 4,139,544, Cl. 260-396.00N.
Ryser, Gottlieb: *See—*
Huppi, Gerhard; DeSilva, Wijitha; and Ryser, Gottlieb, 4,139,367, Cl. 71-94.000.
S. T. DuPont: *See—*
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Sabourin, Edward T.: *See—*
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Sach, George S.: *See—*
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Saeki, Taiichi: *See—*
Kureha, Takeshi; and Saeki, Taiichi, 4,139,799, Cl. 315-13.00C.
Sage, Paul, to Verdol S.A. Device for the selective actuation of the needle selection members in needles looms. 4,139,028, Cl. 139-331.000.
Saint Clair, Donald F. Wrap around cover. 4,139,216, Cl. 281-4.000.
Saito, Hiroshi: *See—*
Fujita, Nobuhiko; and Saito, Hiroshi, 4,139,842, Cl. 340-384.00E.
Sakai, Takahiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic pressure control device for use in automatic transmission. 4,139,015, Cl. 137-115.000.
Sakakibara, Shiro, to Aisin Warner Kabushiki Kaisha. Accumulator for hydraulic control system. 4,138,846, Cl. 60-435.000.
Sakashita, Noriji; and Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Key code generator. 4,138,917, Cl. 84-1.010.
Sakurada, Satoshi: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.
Sakurai, Kunio, to Konishiroku Photo Industry Co., Ltd. Photomask blanks and method of preparing the same. 4,139,443, Cl. 204-192.00C.
Sakurai, Yoshitoshi; Okura, Takao; and Tanaka, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas reaction chambers for internal combustion engine. 4,138,843, Cl. 60-282.000.
Salmon, Mario, to Ing. C. Olivetti & C., S.p.A. Autoadaptive working center for programmable automation. 4,139,888, Cl. 364-105.000.
Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Safety binding for ski boot. 4,139,211, Cl. 280-618.000.
Salter, John W.: *See—*
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Samoto, Masao; Ueno, Kazumi; and Tanaka, Kazuhiro, to Bridgestone Tire Company Limited. Pneumatic tire for vehicles. 4,139,040, Cl. 152-362.00R.
Sample, Thomas E., Jr., to Dresser Industries, Inc. Method for thermally treating oil well drill cuttings. 4,139,462, Cl. 210-72.000.
Sand, Robert H.: *See—*
Trachtenburg, Martin; and Sand, Robert H., 4,138,807, Cl. 52-309.300.
Sander, Wilfried: *See—*
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Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Process for altering, modifying or enhancing the aroma of detergents with substituted bicyclooctene derivatives. 4,139,484, Cl. 252-89.00R.
Sandoz Ltd.: *See—*
Hochreuter, Richard, 4,139,478, Cl. 252-8.800.
Hochreuter, Richard; and Runyon, James R., 4,139,689, Cl. 526-52.400.
Sanford, Robert F., to Princeton Electro Dynamics, Inc. Copy paper test apparatus. 4,139,816, Cl. 324-72.000.
Sannes, Keith N., to General Electric Company. Cyclic carbonate trimer of 2,2-bis(4-hydroxyphenyl)-1,1-dichloroethylene. 4,139,687, Cl. 526-1.000.
Sansui Electric Co., Ltd.: *See—*
Kobayashi, Fumio; and Ban, Nobuaki, 4,139,075, Cl. 181-148.000.
Santa Fe International Corp.: *See—*
Loland, Sven, 4,139,222, Cl. 285-27.000.
Sanyo Denki Kabushiki Kaisha: *See—*
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Sarkisian, Robert; and Hillstrom, David U., to Sarkisian, Robert. Display holder. 4,138,787, Cl. 40-618.000.
Sasaguri, Kiichiro: *See—*
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Satterfield, Larry S.: *See—*
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Sauer, Donald J., to RCA Corporation. CCD Input circuits. 4,139,784, Cl. 307-221.00D.
Sauer, Hans; Lippold, Hans-Martin; and Spahrbier, Dieter, to Varta Batterie Aktiengesellschaft. Galvanic element with negative light metal or zinc electrode. 4,139,683, Cl. 429-219.000.
Sawada, Yoshio: *See—*
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Sawinska, Lucyna: *See—*
Ledochowski, Andrzej; Gieldanowski, Jerzy; Radzikowski, Czeslaw; Horowska, Barbara; Kwasniewska-Rokicinska, Cecylia; Wysocka-Skrzela, Barbara; Sawinska, Lucyna; and Medon, Mieczyslaw, 4,139,531, Cl. 546-106.000.
Saxon, John W. C.: *See—*
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Scavenius, Jens E. B. Cabinet with two or more drawers. 4,139,116, Cl. 220-217.000.
Schaal, Hans, to Daimler-Benz Aktiengesellschaft. Radiator, especially for motor vehicles. 4,139,053, Cl. 165-71.000.
Schaffer, Dorothy B., executrix: *See—*
Shaffer, Lloyd H., deceased; and Schaffer, Dorothy B., executrix, 4,138,992, Cl. 126-271.000.
Schampers, Paulus P. M.: *See—*
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Schat, Hermannus: *See—*
Micic, Ljubomir; Schat, Hermannus; Freyberger, Laurin C.; and Ullrich, Manfred F., 4,139,860, Cl. 358-22.000.
Scheidegger, Rudolf; and Zurrer, August, to Ciba-Geigy AG. Process and apparatus for the removal of silver from fixer solutions. 4,139,431, Cl. 204-109.000.
Scheidemann, Hans: *See—*
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Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Metallurgical method. 4,139,368, Cl. 75-52.000.
Schering Corporation: *See—*
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Sherlock, Margaret H., 4,139,625, Cl. 424-266.000.
Scherzer, Wolfgang; Woesthoff, Ekkehard; and Reuss, Oswald, to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf. Control lever actuated switch. 4,139,749, Cl. 200-61.540.
Scheuermann, Horst; and Hettche, Albert, to BASF Aktiengesellschaft. N-Acylaminonaphthalimides. 4,139,532, Cl. 546-99.000.
Scheuneman, James H.; and Trost, John R., to Sperry Rand Corporation. Double bit error correction using single bit error correction, double bit error detection logic and syndrome bit memory. 4,139,148, Cl. 235-312.000.
Schimpf, Rolf: *See—*
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Schlaikjer, Carl R., to P. R. Mallory & Co. Inc. Method for preventing dendritic growth in secondary cells. 4,139,680, Cl. 429-50.000.
Schlemmer, Alfred H., to Edinburg State Bank. Freezing apparatus and method. 4,138,854, Cl. 62-62.000.
Schmidt, Ferenc J., to Ametek, Inc. Process for the electrolytic formation of lead dioxide solar absorption coating. 4,139,426, Cl. 204-57.000.
Schmidt, Oskar; and Sibral, Walter, to Lim-Holding, S.A. Novel poly(-thio)ethers having terminal amino groups, a process for their production and their application. 4,139,706, Cl. 548-305.000.
Schmitt, Frederick L.: *See—*
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Schmucker, Wayne A. Collapsible and telescoping fishing net. 4,138,790, Cl. 43-12.000.
Schneider, Abraham; and Myers, Harry K., Jr., to Sun Oil Company of Pennsylvania. Catalytic codimerization of norbornadiene with an acrylic acid ester. 4,139,714, Cl. 560-116.000.
Schneider, Abraham: *See—*
Myers, Harry K., Jr.; and Schneider, Abraham, 4,139,715, Cl. 560-116.000.
Schneider, Johann: *See—*
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Schneider, Robert P., to Burroughs Corporation. Circuit means for collecting operational errors in IC chips and for identifying and storing the locations thereof. 4,139,818, Cl. 324-73.00R.
Schneider, Walter. Bathroom cabinet. 4,139,882, Cl. 362-260.000.
Schoellkopf, Jochem: *See—*
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Schoenberg, Jules E., to National Starch and Chemical Corporation. 2-Cyanoacrylate adhesive compositions having enhanced bond strength. 4,139,693, Cl. 526-297.000.
Scholl, Gunter. Method of and system for storing heat. 4,139,056, Cl. 165-104.00S.
Schreiber, Ronald S., to Colgate Palmolive Company. Oral compositions containing an anticalculus agent. 4,139,608, Cl. 424-49.000.
Schreiber, Ronald S., to Colgate Palmolive Company. Oral compositions containing an anticalculus agent. 4,139,609, Cl. 424-49.000.
Schreyer, Gerd: *See—*
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Schroeder, Guenter, to Rohm GmbH. Method for the preparation of

polyacrylimide and polymethacrylimide foams. 4,139,685, Cl. 521-88.000.
Schroeder, Hansjuergen A.: *See—*
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Schroeder, Manfred F.; Biondo, Joseph G.; and Aliotta, Joseph, to Engelhard Minerals & Chemicals Corporation. Amalgam dispensing device. 4,139,030, Cl. 141-98.000.
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Schulman, Lawrence S. Security system for a solid state device. 4,139,864, Cl. 358-188.000.
Schulte, Franz-Josef, to Mannesmann Aktiengesellschaft. Deburring an inside welding seam of hollow profiles. 4,138,925, Cl. 90-24.00B.
Schulz, Donald N.: *See—*
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Lohr, Delmar F., Jr.; Koch, Russell W.; and Schulz, Donald N., 4,139,523, Cl. 260-45.75W.
Schundehutte, Karl H.: *See—*
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Davis, Gerald T.; Schwab, Gerhart; and Shackle, Dale R., 4,139,392, Cl. 106-14.500.
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Schwarz, Peter: *See—*
Pellizzon, Tullio; Piccolo, Luigi; and Schwarz, Peter, 4,139,398, Cl. 106-304.000.
Schweckendiek, Walter; Hiller, Heinrich; and Kohlhaupt, Reinhold, to BASF Aktiengesellschaft. Manufacture of 2-amino-3-bromoanthraquinone. 4,139,543, Cl. 260-381.000.
Sciulli, Felice M.; and Williams, David W., to Westinghouse Electric Corp. High speed sense circuit for semiconductor memories. 4,139,911, Cl. 365-207.000.
Scott, Ian J. C.: *See—*
Riley, Donald E.; Graham, Kenneth A.; Scott, Ian J. C.; and Ogden, S. Duane, 4,139,583, Cl. 261-65.000.
Sea Solar Power: *See—*
Anderson, J. Hilbert, 4,139,054, Cl. 165-76.000.
Seaquist Valve Co., a Division of Pittway Corporation: *See—*
Ewald, Ronald F., 4,139,128, Cl. 222-402.170.
Searle, Russell J. Piston and cylinder machines. 4,138,930, Cl. 92-70.000.
Sebo, Milan J., to Bendix Corporation, The. Modular dash control valve manifold. 4,139,020, Cl. 137-454.200.
Sech, Charles E. Method and apparatus for the distillation purification of organic heat transfer fluids. 4,139,418, Cl. 202-181.000.
Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, The: *See—*
Hilsum, Cyril, 4,139,261, Cl. 350-96.270.
Seebach, Jurgen. Method for the production of conductor plates. 4,138,924, Cl. 90-13.200.
Seiberling, Mildred Kelley: *See—*
Seiberling, Theophilus K., 4,139,405, Cl. 156-128.00R.
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Seidler, Jack, to North American Specialties Corp. Electrical contact and method of making same. 4,139,256, Cl. 339-258.00R.
Seinhart, Manuel: *See—*
Marano, Carlos J.; and Capisano, Enrique, 4,139,312, Cl. 401-176.000.
Seinhart, Norberto Esteban: *See—*
Marano, Carlos J.; and Capisano, Enrique, 4,139,312, Cl. 401-176.000.
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Selective Licensing Incorporated: *See—*
Douglas, George, 4,139,647, Cl. 426-482.000.
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Kitovich, Vsevolod V.; Strakhov, Valentin G.; Popov, Jury M.; Plotnikov, Anatoly F.; and Seleznev, Vladimir N., 4,139,909, Cl. 365-125.000.
Selwitz, Charles M.: *See—*
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Sensormatic Electronics Corporation: *See—*
Reeder, Willes W., 4,139,844, Cl. 340-572.000.
Serkes, Ira M.: *See—*
Anshus, Byron E.; Katsumoto, Kiyoshi; and Serkes, Ira M., 4,139,696, Cl. 528-312.000.
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Shafer, John H.: *See—*
Blair, Gerald E.; Shafer, John H.; Meyers, John J.; and Smith, Frank T. J., 4,139,677, Cl. 428-409.000.
Shaffer, Lloyd H., deceased; and Schaffer, Dorothy B., executrix. Viscosity stabilized solar ponds. 4,138,992, Cl. 126-271.000.
Shaffer, Louis W., to Xerox Corporation. Adaptor for an electrometer probe to permit contact potential measurements and method for using same. 4,139,813, Cl. 324-32.000.
Sharp, H. Eugene: *See—*
Chaney, Preston E.; and Sharp, H. Eugene, 4,139,836, Cl. 340-18.0NC.
Sharp Kabushiki Kaisha: *See—*
Yano, Kozo; Inami, Yasuhiko; and Uede, Hisashi, 4,139,275, Cl. 350-357.000.
Shatagin, Oleg A.: *See—*
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
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Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., to BJ-Hughes Inc. Elevator load control arrangement for a computer-controlled oil drilling rig. 4,139,891, Cl. 364-567.000.
Sheldrake, Stephen J.; and Wang, Harry H. L., to Hughes Aircraft Company. Dye impregnated plastics for laser applications. 4,139,342, Cl. 8-4.000.
Shell Oil Company: *See—*
Collins, Charles G., 4,139,134, Cl. 225-97.000.
Kim, Leo; and Paxson, Timm E., 4,139,566, Cl. 568-679.000.
McEwan, Malcolm W.; and Teekens, Marius B., 4,139,352, Cl. 55-159.000.
Sherk, Fred T.: *See—*
Hanson, Donald O.; and Sherk, Fred T., 4,139,450, Cl. 208-11.0LE.
Sherlock, Hugh P., to M.U. Engineering & Manufacturing Inc. Flower pot construction. 4,138,803, Cl. 47-67.000.
Sherlock, Margaret H., to Schering Corporation. 5-(Substituted triphenylmethyl)picolinamides and their use as anti-acne agents. 4,139,625, Cl. 424-266.000.
Sherrington, Paul R.: *See—*
Bailey, John; Cassie, Leslie H.; Sherrington, Paul R.; and van Roo, Paul, 4,139,486, Cl. 252-135.000.
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Shimada, Isao; and Akiba, Osamu, to Matsushita Electric Works, Ltd. Time division multiplex transmission system in which electrical power is transmitted to remote terminals from a central unit simultaneously with address and control signals. 4,139,737, Cl. 179-15.0AL.
Shimizu, Hisatoshi: *See—*
Miyazaki, Yoshimasa; Matsumura, Shigeru; Yamauchi, Takayoshi; Harada, Morio; and Shimizu, Hisatoshi, 4,139,610, Cl. 424-72.000.
Shimizu, Michihiro: *See—*
Kurahashi, Keizo; Shimizu, Michihiro; Andoh, Shizuo; and Yoshikawa, Kazuo, 4,139,803, Cl. 340-707.000.
Shimizu, Teruo; and Matsuoka, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Circuit board assembly and method of manufacturing the same. 4,139,881, Cl. 361-400.000.
Shimotsuma, Nobuo: *See—*
Komaki, Shojiro; and Shimotsuma, Nobuo, 4,138,841, Cl. 58-23.00R.
Shimzu, Toshio; and Goto, Shuichi, to Japan Radio Company, Limited. Automatic ground-clutter rejection in weather pulse radar system. 4,139,847, Cl. 343-5.00W.
Shin-Etsu Chemical Co., Ltd.: *See—*
Itoh, Kunio; Imai, Kiyoshi; Tanaka, Masaki; and Kumagae, Kimitaka, 4,139,519, Cl. 260-42.260.
Shinozaki, Fumiaki: *See—*
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Shiokoshi, Youhei: *See—*
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Shionogi & Co., Ltd.: *See—*
Narisada, Masayuki, 4,139,711, Cl. 560-8.000.
Shipley, Robert M., Jr. Solar heating unit. 4,138,994, Cl. 126-271.000.
Shiraishi, Fumitake, to Tokyo Shibaura Electric Co., Ltd. Magnetic disc recording and/or reproducing apparatus with means to damp and lock disk rotation. 4,139,874, Cl. 360-86.000.
Shotbolt, Keith. Ball and socket joint. 4,139,221, Cl. 285-18.000.
Shpichinetsky, Efim S.: *See—*
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.
Shuey, Kenneth C., to Westinghouse Electric Corp. Apparatus for sensing a high phase signal from a multi-phase AC load circuit. 4,139,878, Cl. 361-93.000.

Shuster, Edward J.: *See*—
Light, Kenneth K.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., 4,139,650, Cl. 426-538.000.
Shutie, Orin S.; and Jenkins, Leonard A., to Metal Box Limited. Printing and coating method. 4,139,656, Cl. 427-47.000.
Sibral, Walter: *See*—
Schmidt, Oskar; and Sibral, Walter, 4,139,706, Cl. 548-305.000.
Sickler, Kenneth H.: *See*—
Forhaltz, Howard A.; and Sickler, Kenneth H., 4,138,899, Cl. 74-100.00R.
Sidi, Henri, to Tenneco Chemicals, Inc. Color stabilization of vinyl chloride resins. 4,139,697, Cl. 528-492.000.
Sieger, Samuel M., to Woodstream Corporation. Tackle box improvement. 4,139,096, Cl. 206-315.00R.
Siemens AG: *See*—
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, 4,139,328, Cl. 415-1.000.
Siemens Aktiengesellschaft: *See*—
Ablassmeier, Ulrich, 4,139,782, Cl. 307-221.00D.
Kersten, Ralf; and Witte, Hans-Hermann, 4,139,259, Cl. 350-96.160.
Kuballa, Siegfried, 4,139,727, Cl. 174-68.500.
Mahlein, Hans; and Winzer, Gerhard, 4,139,262, Cl. 350-96.330.
Streich, Georg; and Gnahn, Gunter, 4,139,830, Cl. 335-191.000.
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Jakob, Herbert E.; and Silbernagel, Richard A., 4,139,318, Cl. 404-90.000.
Silverman, Harold: *See*—
Keyt, Ferris G.; and Silverman, Harold, 4,139,190, Cl. 271-183.000.
Simmons, Harold C., to Parker-Hannifin Corporation. Dual air-blast fuel nozzle. 4,139,157, Cl. 239-400.000.
Simon, Ulrich; Werner, Klaus-Dieter; Hoffmann, Dieter; and Pontani, Bernd, to Kraftwerk Union Aktiengesellschaft. Blow-off device for limiting excess pressure in nuclear power plants, especially in boiling water nuclear power plants. 4,139,413, Cl. 176-38.000.
Simons, Charles W.; O'Neill, Gerald J.; and Gribens, Joel A., to W. R. Grace & Co. Aerosol propellant for personal products. 4,139,607, Cl. 424-45.000.
Simonson, Gordon L. Filter sector. 4,139,472, Cl. 210-232.000.
Simpson, Jon H.: *See*—
Janssen, Edward W.; and Simpson, Jon H., 4,139,676, Cl. 428-402.000.
Singer, Barry M.; and Thefaine, Yannick J., to North American Philips Corporation. Method of reticulating a pyroelectric vidicon target. 4,139,444, Cl. 204-192.00E.
Singer Company, The: *See*—
Eisenberg, Robert M.; and Quick, George R., 4,139,868, Cl. 360-33.000.
Garron, Stephen A., 4,138,955, Cl. 112-158.00E.
Papajewski, Reinhold, 4,138,958, Cl. 112-292.000.
Singh, Balwant: *See*—
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Singler, Emil A.: *See*—
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Parkinson, Ronald; and Sinton, Richard A., 4,139,430, Cl. 204-108.000.
Sipek, Ladislav, to Centro-Maskin Goteborg AB. Method and device for igniting gas planing. 4,139,757, Cl. 219-68.000.
Sipos, Laszlo, to GCA Corporation. Positive displacement flow through fluid pump. 4,139,333, Cl. 417-63.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. N-Phenyl-N'-benzoyl-ureas and pesticidal compositions and uses therefor. 4,139,636, Cl. 424-322.000.
Sirvet, Enn: *See*—
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Sitler, Rickie L., to Armstrong Cork Company. Method of and apparatus for metering fast-reacting saturant onto sheet material. 4,139,662, Cl. 427-358.000.
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Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
SK&F Lab Co.: *See*—
Labaw, Clifford S.; Webb, Robert L.; and Wellman, George R., 4,139,708, Cl. 548-342.000.
SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst M.; Oischewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,139,242, Cl. 308-6.00C.
Sladkoshteev, Vladimir T.: *See*—
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
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Sloan, Kenneth B.: *See*—
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Small, Charles T.: *See*—
Morrill, Justin S., Jr.; Farnbach, William A.; and Small, Charles T., 4,139,903, Cl. 364-900.000.
Small, Robert E.; Hildebolt, William M.; and Hundt, Murray T., to Campbell Soup Company. Protein texturization. 4,139,648, Cl. 426-511.000.
Smith, Bertha M. Picture frame. 4,138,786, Cl. 40-158.00R.
Smith, Bob L., deceased: *See*—
Berg, Norman J.; Smith, Bob L., deceased; and Adams, Allen B., legal representative, 4,139,277, Cl. 350-358.000.
Smith, Eugene L., Jr.: *See*—
Wang, Samuel S.; and Smith, Eugene L., Jr., 4,139,481, Cl. 252-61.000.
Smith, Frank T. J.: *See*—
Blair, Gerald E.; Shafer, John H.; Meyers, John J.; and Smith, Frank T. J., 4,139,677, Cl. 428-409.000.
Smith, Gary R.: *See*—
Ashdown, Glynn R.; Smith, Gary R.; and Finder, Kenneth A., 4,139,745, Cl. 179-175.30F.
Smith, Herman W., to Upjohn Company, The. ω-Aryl-13,14-didehydro-inter-oxa-PGA compounds. 4,139,712, Cl. 560-53.000.
Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,139,624, Cl. 424-263.000.
Smith & Wesson Chemical Company, Inc.: *See*—
Litman, Alan, 4,139,268, Cl. 350-255.000.
Smith, William E., to General Electric Company. Process for the preparation of 2-alkoxytetrahydrofurans via hydroformylation of allylic alcohols. 4,139,542, Cl. 260-347.800.
SmithKline Corporation: *See*—
Berges, David A., 4,139,701, Cl. 544-26.000.
Snavely, Kenneth E., to Phillips Petroleum Company. Antitack agent. 4,139,666, Cl. 428-36.000.
Societe Anonyme Automobiles Citroen: *See*—
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Societe Anonyme DBA: *See*—
Hamelin, Gilbert; and Monpetit, Louis, 4,138,975, Cl. 123-102.000.
S.A. Etablissements Francois Salomon & Fils: *See*—
Riedel, Tilo, 4,139,213, Cl. 280-605.000.
Societe Europeenne des Produits Refractaires: *See*—
Esnoult, Marc; and Ayme-Jouve, Michel, 4,139,394, Cl. 106-57.000.
Societe Nationale Elf Aquitaine: *See*—
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Societe Nationale Elf Aquitaine (Production): *See*—
Lutz, Jean; and Besnard, Francois, 4,138,886, Cl. 73-151.000.
Solarex Corporation: *See*—
Lindmayer, Joseph, 4,139,399, Cl. 136-89.00H.
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Portier, Jean L., 4,138,783, Cl. 29-606.000.
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Solomon, Jack; and Kinneman, Thomas F., to Union Carbide Corporation. Process for sintering powder metal parts. 4,139,375, Cl. 75-224.000.
Solopov, Vladimir I.: *See*—
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.
Sontheimer, Carl G.; and Clare, Richard D., to Cuisinarts, Inc. Method and apparatus for conversion of an uneven arm beam balance from metric weight to English weight measurement and vice versa. 4,139,068, Cl. 177-1.000.
Sony Corporation: *See*—
Iida, Mikio; and Hosoya, Mitsuru, 4,139,865, Cl. 358-188.000.
Mogi, Takao, 4,139,840, Cl. 340-347.0DA.
Ohsawa, Mitsuo, 4,139,824, Cl. 330-254.000.
Tachi, Katsuichi, 4,139,870, Cl. 360-43.000.
Tachi, Katsuichi, 4,139,872, Cl. 360-72.000.
Tatara, Shokichi; Umeda, Kenkichi; and Takahashi, Hiroshi, 4,139,875, Cl. 360-94.000.
Sorbier, Pierre. Products obtained by molding ligneous materials and their method of manufacture. 4,139,508, Cl. 260-17.500.
Sorg GmbH & Co. Kg: *See*—
Piper, Helmut, 4,139,360, Cl. 65-134.000.
Sosin, Gershon J. Outside corner square. 4,138,819, Cl. 33-113.000.
Sosnenko, Vladimir I.: *See*—
Krupenik, Vitaly N.; Sosnenko, Vladimir I.; Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Manokhin, Anatoly I.; Sitnov, Anatoly G.; Ordinartsev, Vladimir N.; Korotina, Raisa P.; and Druzhinin, Valery P., 4,139,135, Cl. 226-166.000.
Sotirianos, Konstantin, to Process Engineering Company. Apparatus for and a method of separating a foam into its liquid and gaseous components. 4,139,350, Cl. 55-42.000.
Southern Railway Company: *See*—
Carman, Richard W.; and Larsen, Glen D., 4,139,226, Cl. 292-285.000.
Souza, Anthony J., to Woodstream Corporation. Repeating animal trap assembly. 4,138,796, Cl. 43-61.000.

Spahrbier, Dieter: *See*—
Sauer, Hans; Lippold, Hans-Martin; and Spahrbier, Dieter, 4,139,683, Cl. 429-219.000.

Specktor, Gerald A. Accessories for an apparatus for repairing and straightening. 4,138,877, Cl. 72-461.000.

Spedale, Joseph J.: *See*—
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Spencer Wright Industries, Inc.: *See*—
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Sperry Rand Corporation: *See*—
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Long, John H., 4,138,838, Cl. 56-377.000.
Pires, Antonio, 4,138,809, Cl. 30-200.000.
Scheuneman, James H.; and Trost, John R., 4,139,148, Cl. 235-312.000.

Sperry-Sun, Inc.: *See*—
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Springer, Hartmut: *See*—
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Springer, L. Richard: *See*—
United States of America, National Aeronautics and Space Administration; Engel, Alexander; and Springer, L. Richard, 4,139,839, Cl. 340-347.0DD.

Spurr, Robert E. Security door guard. 4,139,227, Cl. 292-339.000.

Stadler, Fritz: *See*—
Breuer, Friedrich; Brotzmann, Karl; Duderstadt, Gunter; Fichte, Rudolf; and Stadler, Fritz, 4,139,370, Cl. 75-60.000.

Stagemeyer, Merlin D.; and Allcorn, Seth F., to Oil Spill Recovery, Inc. System for separating, removing and recovering contaminant materials from a body of water. 4,139,470, Cl. 210-170.000.

Stahlecker, Fritz; and Stahlecker, Hans. Service device for one or more open end spinning frames. 4,138,839, Cl. 57-270.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Open-end spinning frame with a device for replacing full bobbins with empty tubes. 4,139,162, Cl. 242-35.50A.

Stahlecker, Hans: *See*—
Stahlecker, Fritz; and Stahlecker, Hans, 4,138,839, Cl. 57-270.000.
Stahlecker, Fritz, 4,139,162, Cl. 242-35.50A.

Stanciu, Virgil V., to Tempcraft Tool & Mold, Inc. Turbine wheel pattern and method of making same. 4,139,046, Cl. 164-45.000.

Standard Oil Company, The: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,139,552, Cl. 260-465.300.
White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., 4,139,719, Cl. 562-535.000.

Stauble, Georg; and Hintner, Josef, to Knorr-Bremse GmbH. Brake accelerator for a fluid-pressure brake system having a brake control valve. 4,139,239, Cl. 303-82.000.

Steen, Charles R., to Reliance Electric Company. Direct axis aiding permanent magnets for a laminated synchronous motor rotor. 4,139,790, Cl. 310-156.000.

Steidle, Werner; Sander, Wilfried; and Deubelbeiss, Ernst, to Karl Schmidt GmbH. Light alloy piston for diesel engines. 4,138,984, Cl. 123-193.00P.

Steiner, Russell I., to Crompton & Knowles Corporation. Heat transfer ink, sheet, process and printed fabric. 4,139,343, Cl. 8-2.50A.

Steinmaier, Walter; and Solo de Zaldivar, Jose, to U.S. Philips Corporation. Method of manufacturing a semiconductor device utilizing doped oxides and controlled oxidation. 4,139,402, Cl. 148-188.000.

Stella, Joseph A.; and Knight, Frank W., to Polaroid Corporation. Film processing cassette containing means for absorbing excess film processing fluid. 4,139,284, Cl. 352-130.000.

Stendel, Wilhelm: *See*—
Hoffmann, Hellmut; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,615, Cl. 424-216.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,139,636, Cl. 424-322.000.

Stephens, Robert K., to Polaroid Corporation. Photographic sound reproduction using silver diffusion transfer. 4,139,382, Cl. 96-3.000.

Stephenson, Edward S. Method of baking and product thereof. 4,139,644, Cl. 426-134.000.

Sterling Drug Inc.: *See*—
Bauer, Gerald L., 4,139,461, Cl. 210-63.00R.
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Stevens, Albert: *See*—
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Stevens, Henry C.: *See*—
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Steward, Frederick A.; and Weet, James H., to Dart Industries Inc. Electrolytic cell. 4,139,429, Cl. 204-105.00R.

Stewart, Charles L.: *See*—
Gastrock, Edward A., 4,139,646, Cl. 426-430.000.

Stewart, John V., to Swiss Aluminium Ltd. Method for obtaining engravers template. 4,139,386, Cl. 96-36.000.

Stiles, Charles E., to Actionite Company. Apparatus for decasing food links. 4,138,767, Cl. 17-1.00F.

Stjepanovic, Milorad: *See*—
Karadavidoff, Isaac; Stjepanovic, Milorad; Moreau, Michele; and Rohrbach, Philippe, 4,139,631, Cl. 424-285.000.

Stockel, Dieter, to Rau, G. Method for producing an electrical contact element. 4,139,140, Cl. 228-110.000.

Stogryn, Eugene L.: *See*—
Klemann, Lawrence P.; Newman, Gerald H.; and Stogryn, Eugene L., 4,139,681, Cl. 429-191.000.

Stoilov, Nicolay S.: *See*—
Ronnquist, Axel G.; Lindahl, Erik T.; and Stoilov, Nicolay S., 4,139,659, Cl. 427-249.000.

Stolar, Eugene R. Sequential multiple toppling pull toy. 4,138,797, Cl. 46-1.00R.

Stolz, Hans-Peter: *See*—
Huhne, Gerd; and Stolz, Hans-Peter, 4,139,241, Cl. 305-51.000.

Stolzenburg, Rudolf: *See*—
Odenwalder, Heinrich; Puschel, Walter; and Stolzenburg, Rudolf, 4,139,383, Cl. 96-29.00D.

Stopp, Gerhard; and Schimpf, Rolf, to Bayer Aktiengesellschaft. Process for preparing free-flowing 2-nitro-4-acetylamino-anisole. 4,139,558, Cl. 260-562.00A.

Straitz, John F., III, to Combustion Unlimited Incorporated. Flare gas stack with purge control. 4,139,339, Cl. 431-202.000.

Strakhov, Valentin G.: *See*—
Kitovich, Vsevolod V.; Strakhov, Valentin G.; Popov, Jury M.; Plotnikov, Anatoly F.; and Seleznev, Vladimir N., 4,139,909, Cl. 365-125.000.

Strauss, Georg: *See*—
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.

Streich, Georg; and Gnahn, Gunter, to Siemens Aktiengesellschaft. Electromagnetic switching apparatus including improved means for mechanically latching a contact bridge carrier. 4,139,830, Cl. 335-191.000.

Strelitz, Robert A.: *See*—
Grier, Nathaniel; Dybas, Richard A.; and Strelitz, Robert A., 4,139,559, Cl. 260-563.00P.

Strop, Petr: *See*—
Coupek, Jiri; Mikes, Otakar; Strop, Petr; and Krivakova, Miroslava, 4,139,684, Cl. 521-27.000.

Studtmann, George H.: *See*—
Overzet, John K.; and Studtmann, George H., 4,139,885, Cl. 363-58.000.

Stunkel, Helmut, to Kraftwerk Union Aktiengesellschaft. Liquid waste disposal system. 4,139,420, Cl. 203-37.000.

Sugishita, Nobuyuki: *See*—
Yoshino, Yoshimi; and Sugishita, Nobuyuki, 4,139,832, Cl. 338-308.000.

Sugiyama, Kengo: *See*—
Ninomiya, Yasumasa; Nabeshima, Yasuo; Sugiyama, Kengo; and Hibino, Yozo, 4,139,107, Cl. 214-40.000.

Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See*—
Hiraoka, Nobuaki; and Matumoto, Syuji, 4,139,139, Cl. 228-102.000.

Summerlin, Frederick A.: *See*—
McGauran, Hugh K.; Saxon, John W. C.; Lacey, Raymond D.; and Summerlin, Frederick A., 4,138,921, Cl. 85-7.000.

Sun-Econ, Inc.: *See*—
Orlowski, Raymond, 4,138,856, Cl. 62-181.000.

Sun Oil Company of Pennsylvania: *See*—
Myers, Harry K., Jr.; and Schneider, Abraham, 4,139,715, Cl. 560-116.000.
Schneider, Abraham; and Myers, Harry K., Jr., 4,139,714, Cl. 560-116.000.

Sundie, Richard D.; Michael, William R.; and Ulmer, Harry E., to Allied Chemical Corporation. One-component binder for fiberboard. 4,139,507, Cl. 260-29.40R.

Sundstrand Corporation: *See*—
Hucker, David J.; and Glennon, Timothy F., 4,139,780, Cl. 307-86.000.
Hucker, David J., 4,139,807, Cl. 318-718.000.

Sunkist Growers, Inc.: *See*—
Conway, Tim D., 4,139,766, Cl. 235-92.0PK.

Suntech, Inc.: *See*—
Seitzer, Walter H., 4,139,550, Cl. 260-449.60R.

Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,139,552, Cl. 260-465.300.

Suslin, Vladimir I.; Dubovik, Alexandr I.; Makeev, Boris A.; Razdymakha, Pavel S.; Lekarev, Zinovy A.; Pilipenko, Vitaly A.; and Etnaer, Alexandr I., to Nauchno-Issledovatelsky Institut Avtomatizatsii Upravlenia I Proizvodstva Niiap. Device for electrolytic treatment of workpieces. 4,139,446, Cl. 204-224.00R.

Suspa Federungstechnik Fritz Bauer & Sohne OHG: *See*—
Bauer, Fritz, 4,139,175, Cl. 248-404.000.

Suzue, Seisuke: *See*—
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.

Suzuki, Hitoshi: *See*—
Yamada, Akira; and Suzuki, Hitoshi, 4,139,791, Cl. 310-313.000.

Suzuki, Seiji: *See*—
Maruyama, Jiro; and Suzuki, Seiji, 4,139,225, Cl. 289-1.500.

Suzuki, Shigeto: *See*—
Wall, Robert G.; and Suzuki, Shigeto, 4,139,556, Cl. 562-540.000.

Suzuki, Suzuo: *See*—
Masaki, Kenji; Suzuki, Suzuo; and Konno, Mitinobu, 4,138,844, Cl. 60-286.000.

Svensson, Algot I., to Formfac International AB. Device for connect-

ing two inclined tubes to a leg or other tubular piece. 4,139,316, Cl. 403-172.000.

Swanson, Lynwood W., to Oregon Graduate Center. Method and apparatus for producing bright high resolution ion beams. 4,139,773, Cl. 250-423.00R.

Swanson, Wilbur M. Carburetor. 4,139,581, Cl. 261-44.00A.

Swartz, Mitchell R., to Massachusetts Institute of Technology. Electrochemical process and apparatus to control the chemical state of a material. 4,139,348, Cl. 23-232.00E.

Swiss Aluminium Ltd.: *See—*
Stewart, John V., 4,139,386, Cl. 96-36.000.
Weber, Alfred, 4,138,779, Cl. 29-432.100.

Sybron Corporation: *See—*
Peeler, Donald H., 4,139,000, Cl. 128-2.05G.

Syntex (U.S.A.) Inc.: *See—*
Beard, Colin, 4,139,626, Cl. 424-267.000.
Beeby, Philip J., 4,139,618, Cl. 424-246.000.

Tabel, Walter; and Johanns, Heinz, to AGFA-Gevaert AG. Loading a cassette with an endless roll of strip form material. 4,139,163, Cl. 242-56.00R.

Tachi, Katsuichi, to Sony Corporation. Circuit for demodulating a pulse width modulated signal. 4,139,870, Cl. 360-43.000.

Tachi, Katsuichi, to Sony Corporation. Video signal reproducing apparatus with a track searching arrangement. 4,139,872, Cl. 360-72.000.

Tachibana, Kyozaburo: *See—*
Matsunaga, Kinjiro; Masuda, Shinichi; Nakagawa, Yunosuke; and Tachibana, Kyozaburo, 4,139,509, Cl. 260-17.00R.

Tackett, Louis E., to UNEP3 Energy Systems, Inc. Electrically operated vehicle and electrified roadway therefor. 4,139,071, Cl. 180-2.00R.

Taihou Kogyo Kabushiki Kaisha: *See—*
Takaoka, Hikaru; Inoshita, Teruaki; Fukuda, Takashi; and Toga, Hitoshi, 4,138,775, Cl. 29-156.40R.

Taisei Kogyo Kabushiki Kaisha: *See—*
Hattori, Kiyoshi, 4,139,356, Cl. 62-278.000.

Takada, Toshiyuki: *See—*
Fujikawa, Tetsuzo; and Takada, Toshiyuki, 4,138,971, Cl. 123-59.0BS.

Takada, Yusaku: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,139,300, Cl. 355-14.000.

Takagi, Tohru: *See—*
Araki, Kunio; Makuuchi, Keizo; Takagi, Tohru; and Nakayama, Hiroyuki, 4,139,437, Cl. 204-159.160.

Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, to Futaba Denshi Kogyo Kabushiki Kaisha. Schottky barrier type solid-state element. 4,139,857, Cl. 357-15.000.

Takahashi, Hiroshi: *See—*
Tatara, Shokichi; Umeda, Kenkichi; and Takahashi, Hiroshi, 4,139,875, Cl. 360-94.000.

Takahashi, Kouzou: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, 4,139,513, Cl. 260-29.6TA.
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; and Yoshikawa, Toshiharu, 4,139,548, Cl. 260-448.20B.
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kato, Yasuyuki; and Ichihara, Masuji, 4,139,692, Cl. 526-218.000.

Takahashi, Yasuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Miniaturized telephoto camera lens assembly. 4,139,264, Cl. 350-216.000.

Takaoka, Hikaru; Inoshita, Teruaki; Fukuda, Takashi; and Toga, Hitoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Taihou Kogyo Kabushiki Kaisha. Method for manufacturing a shoe for a swash-plate type compressor. 4,138,775, Cl. 29-156.40R.

Takaoka, Yukio; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens stop auxiliary brake control device in automatic exposure camera of the lens stop value control type. 4,139,290, Cl. 354-43.000.

Takayanagi, Takeo; Inoue, Mamoru; Kuwano, Satoshi; Minabe, Hitoshi; and Yabuzaki, Shunichi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for preparing a casing loaded with a plurality of articles. 4,138,835, Cl. 53-474.000.

Takeda Chemical Industries, Ltd.: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,139,545, Cl. 260-396.00R.

Takehara, Kiyoshi: *See—*
Hayama, Noboru; Hasegawa, Takanori; Takehara, Kiyoshi; and Kera, Masakazu, 4,139,759, Cl. 219-216.000.

Takemoto, Yasunori; Matsuoka, Tsutomu; and Nakasumi, Tadataka, to Toyo Kogyo Co., Ltd. Air-fuel mixture intake system. 4,138,974, Cl. 123-97.00B.

Talbert, Miles E. Portable device for measuring 25 percent R.M.A. compression values. 4,138,883, Cl. 73-818.000.

Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.

Tamborrino, Richard. Water supply and control device. 4,138,967, Cl. 119-78.000.

Tanaka, Atsuyuki, to General Company Limited; and Minolta Camera Co., Ltd. Microfilm searching reader. 4,139,898, Cl. 364-900.000.

Tanaka, Kazuhiro: *See—*
Samoto, Masao; Ueno, Kazumi; and Tanaka, Kazuhiro, 4,139,040, Cl. 152-362.00R.

Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, to Toyo Contact Lens Co., Ltd. Copolymer for soft contact lens, its preparation and soft contact lens made thereof. 4,139,513, Cl. 260-29.6TA.

Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; and Yoshikawa, Toshiharu, to Toyo Contact Lens Co., Ltd. Methyldi(trimethylsiloxy)sylylpropylglycerol methacrylate. 4,139,548, Cl. 260-448.20B.

Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kato, Yasuyuki; and Ichihara, Masuji, to Toyo Contact Lens Co., Ltd. Copolymer for contact lens, its preparation and contact lens made thereof. 4,139,692, Cl. 526-218.000.

Tanaka, Masaki: *See—*
Itoh, Kunio; Imai, Kiyoshi; Tanaka, Masaki; and Kumagae, Kimitaka, 4,139,519, Cl. 260-42.260.

Tanaka, Minoru: *See—*
Sakurai, Yoshitoshi; Okura, Takao; and Tanaka, Minoru, 4,138,843, Cl. 60-282.000.

Tanaka, Toshio: *See—*
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.

Tangen, Oddvar: *See—*
Yin, Ee T.; and Tangen, Oddvar, 4,139,415, Cl. 195-103.50R.

Tani, Tatsuo, to Ricoh Co., Ltd. Copying apparatus capable of producing copies differing in size from originals. 4,139,298, Cl. 355-8.000.

Tapio, Olli; Veijonen, Lassi; and Riihinen, Kalevi. Method of dewatering and drying in a Yankee machine. 4,139,410, Cl. 162-206.000.

Taplin, Lael B., to Bendix Corporation, The. Fuel demand engine control system. 4,138,979, Cl. 123-119.0EC.

Tartar, Adolphe A. Device for emptying a silo, and silo consisting of such a device. 4,139,106, Cl. 214-17.00D.

Tashman, Philip. Adjustable shelf assembly. 4,138,953, Cl. 108-144.000.

Tatara, Shokichi; Umeda, Kenkichi; and Takahashi, Hiroshi, to Sony Corporation. Cassette and card recording and/or reproducing apparatus. 4,139,875, Cl. 360-94.000.

Tateyama, Masamitsu: *See—*
Nakai, Yoshio; and Tateyama, Masamitsu, 4,139,691, Cl. 526-195.000.

Tatsumi, Susumu: *See—*
Miyakawa, Seiichi; and Tatsumi, Susumu, 4,139,299, Cl. 355-10.000.

Taylor, Charles W.; Lasater, Donald A.; and Ebbesmeyer, Steven R., to Dover Corporation. Liquid dispensing nozzle having controlled shut-off mechanism. 4,139,032, Cl. 141-206.000.

Tchernev, Dimiter I. Sorption system for low-grade (solar) heat utilization. 4,138,850, Cl. 60-641.000.

TDX Systems, Inc.: *See—*
von Meister, William; and Peyser, Alan, 4,139,739, Cl. 179-18.00B.

Tedder, Paul M., to United States of America, Army. Doppler fuzing system having a high resistance to noise and jamming. 4,139,849, Cl. 343-7.0PF.

Teekens, Marius B.: *See—*
McEwan, Malcolm W.; and Teekens, Marius B., 4,139,352, Cl. 55-159.000.

Teijin Limited: *See—*
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.

Teknekron, Inc.: *See—*
Ganske, Kingston E.; and Falk, Mervin L., 4,139,901, Cl. 364-900.000.

Tektronix, Inc.: *See—*
Boer, Machiel; and Dikeman, James E., 4,139,817, Cl. 324-72.500.
Ostermeier, Bruce H.; Haven, Duane A.; and Sletmoe, Gordon M., 4,139,800, Cl. 315-13.0ST.

Teledyne Industries, Inc.: *See—*
Yih, Stephen W. H.; Worcester, Samuel A., Jr.; and Rudy, Erwin, 4,139,374, Cl. 75-204.000.

Teledyne McCormick Selph: *See—*
Goddard, Terrence P.; and Thatcher, Donald N., 4,139,404, Cl. 149-19.200.

Telesonics, Inc.: *See—*
Wegner, Carl R., 4,139,866, Cl. 358-198.000.

Telex Communications, Inc.: *See—*
Flygstad, Dean W., 4,139,743, Cl. 179-156.00A.

Tempcraft Tool & Mold, Inc.: *See—*
Stanciu, Virgil V., 4,139,046, Cl. 164-45.000.

Tennant Company: *See—*
Krier, Keith N.; and Mason, Richard A., 4,138,756, Cl. 15-83.000.

Tenneco Chemicals, Inc.: *See—*
Rudner, Bernard; Noone, Thomas M.; and Pauly, Peter D., 4,139,501, Cl. 521-136.000.
Sidi, Henri, 4,139,697, Cl. 528-492.000.

Tennessee Valley Authority: *See—*
Kohler, John J.; Gautney, Joe; Kim, Yong K.; and McCullough, John F., 4,139,597, Cl. 423-243.000.

Teradyne, Inc.: *See—*
Ashdown, Glynn R.; Smith, Gary R.; and Finder, Kenneth A., 4,139,745, Cl. 179-175.30F.

Terry, John C.: *See—*
Wyndham, Ronald; and Terry, John C., 4,139,602, Cl. 423-496.000.

Texaco Development Corporation: *See—*
Waddill, Harold G., 4,139,524, Cl. 528-109.000.
Watts, Lewis W., Jr., 4,139,698, Cl. 536-50.000.

Texaco Inc.: *See—*
Dorawala, Tansukhlal G.; Kerr, Edwin R.; Kochis, Robert G.; and Koniz, Leon F., 4,139,491, Cl. 252-440.000.

Dorawala, Tansukhlal G.; Reinhard, Russell R.; and Lewis, Paul H., 4,139,496, Cl. 252-465.000.
Texas Gas Transport Company: *See—*
Bresie, Don A.; and Fowler, Donald W., 4,139,019, Cl. 137-351.000.
Texas Instruments Incorporated: *See—*
McElroy, David J., 4,139,785, Cl. 307-238.000.
Poland, Sydney W., 4,139,893, Cl. 364-706.000.
Raymond, Joseph H., Jr.; and Gudger, Keith H., 4,139,786, Cl. 307-238.000.
White, Arlton H., 4,139,074, Cl. 181-120.000.
Textron, Inc.: *See—*
Hanusa, Helmut G., 4,139,187, Cl. 267-145.000.
Manning, Harry F., 4,138,771, Cl. 24-205.11F.
Tezuka, Tohru: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.
Th. Goldschmidt AG: *See—*
Greinacher, Ekkehard, 4,139,427, Cl. 204-64.00R.
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,139,503, Cl. 521-112.000.
Thaler, Warren A.; Buckley, Donald J.; and Kennedy, Joseph P., to Exxon Research & Engineering Co. High molecular weight high unsaturation C4-C10 isoolefin conjugated diolefin copolymers and multipolymers containing methylcyclopentadiene. 4,139,695, Cl. 526-308.000.
Thatcher, Donald N.: *See—*
Goddard, Terrence P.; and Thatcher, Donald N., 4,139,404, Cl. 149-19.200.
Thefaine, Yannick J.: *See—*
Singer, Barry M.; and Thefaine, Yannick J., 4,139,444, Cl. 204-192.00E.
Thiel, Hans-Dieter: *See—*
Kandler, Joachim; Komorniczyk, Klaus; Thiel, Hans-Dieter; Strauss, Georg; Portz, Wilhelm; and Braun, Albert, 4,139,369, Cl. 75-58.000.
Thielen, James E., to Minnesota Mining and Manufacturing Company. Machine head assembly and torque-transmitting device incorporated in the same. 4,138,804, Cl. 51-168.000.
Thoese, Klaus; and Jung, Karl-Heinz, to Hoechst Aktiengesellschaft. Composition suitable for use as an adhesive layer on a shaped structure of a polyester. 4,139,506, Cl. 260-16.000.
Thomas, Jerry D.: *See—*
Griffith, Cecil B.; Thomas, Jerry D.; and Wiktorowski, Thomas A., 4,139,184, Cl. 266-220.000.
Thomason, Harry E.; and Thomason, Harry J. L., Jr. Solar heating (cooling). 4,139,055, Cl. 165-96.000.
Thomason, Harry J. L., Jr.: *See—*
Thomason, Harry E.; and Thomason, Harry J. L., Jr., 4,139,055, Cl. 165-96.000.
Thompson, Garris A.; and Merritt, John H., Jr., to Applied Engineering Co. Heat exchanger and economizer. 4,138,969, Cl. 122-421.000.
Thompson, Richard L., to General Electric Company. Luminaire lowering device. 4,139,884, Cl. 362-430.000.
Thompson, William C. Boat steering mechanism. 4,138,963, Cl. 115-12.00R.
Thomson-Brandt: *See—*
Lehureau, Jean-Claude; and Bricot, Claude, 4,139,263, Cl. 350-157.000.
Thomson-CSF: *See—*
Bouygues, Jean; Dubos, Jacques; and Jacques, Andre, 4,139,260, Cl. 350-96.220.
Charlot, Jean C.; and Cardinet, Pierre, 4,139,850, Cl. 343-16.00M.
Commault, Yves; and Campan, Yves, 4,139,828, Cl. 333-26.000.
Thornburgh, William F., to General Motors Corporation. Electric thermal switch valve. 4,139,151, Cl. 236-48.00R.
Thornton, Douglas S.: *See—*
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,139,699, Cl. 536-109.000.
Thumim, Alfred I.: *See—*
Aneshansley, James T.; Diebold, Gerard J.; and Thumim, Alfred I., 4,139,294, Cl. 354-217.000.
Tif Instruments, Inc.: *See—*
Liebermann, Leonard N., 4,138,879, Cl. 73-19.000.
Timmerman, Daniel M.: *See—*
Van Landeghem, Willy K.; Timmerman, Daniel M.; Willem, Arnold A.; and De Winter, Walter F., 4,139,768, Cl. 250-315.00A.
TMC Corporation: *See—*
Kubelka, Axel R., 4,138,828, Cl. 36-121.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.
Toga, Hitoshi: *See—*
Takaoka, Hikaru; Inoshita, Teruaki; Fukuda, Takashi; and Toga, Hitoshi, 4,138,775, Cl. 29-156.40R.
Toho Koki Kabushiki Kaisha: *See—*
Namiguchi, Yasuteru, 4,138,911, Cl. 82-72.000.
Tokico Ltd.: *See—*
Nagase, Toshiro; and Miyazawa, Hiroshi, 4,139,182, Cl. 267-120.000.
Tokyo Sanyo Denki Kabushiki Kaisha: *See—*
Kato, Hiroshi, 4,138,918, Cl. 84-1.030.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Niwa, Kazuo, 4,138,781, Cl. 29-571.000.
Shiraishi, Fumitake, 4,139,874, Cl. 360-86.000.
Yamada, Akira; and Suzuki, Hitoshi, 4,139,791, Cl. 310-313.000.
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,139,289, Cl. 354-23.00D.
Tomalia, Donald A.: *See—*
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,139,539, Cl. 260-338.000.
Tomashek, James R.: *See—*
Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., 4,139,891, Cl. 364-567.000.
Tominaga, Shigetake: *See—*
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, 4,139,576, Cl. 260-857.0PA.
Tomita, William K.: *See—*
McCrum, Eugene F.; Tomita, William K.; Myers, James G.; and Rehak, John T., 4,139,769, Cl. 250-341.000.
Tomlinson, Kenneth; and Duff, Edward J., to Colgate Palmolive Company. Process for preparing dicalcium phosphate dihydrate having a portion of the calcium displaced by divalent metal ion. 4,139,599, Cl. 423-308.000.
Tompkins, Harry A. Hinged handcuffs and lock. 4,138,867, Cl. 70-16.000.
Tonomura, Shinji: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Hyogi; Tamao, Yoshikuni; Ohkubo, Kazdo; Tezuka, Tohru; and Tonomura, Shinji, 4,139,529, Cl. 260-239.0BC.
Topliss, John G.: *See—*
Neri, Rudolph O.; and Topliss, John G., 4,139,638, Cl. 424-324.000.
Toray Industries, Inc.: *See—*
Miwa, Kishio; Inoue, Takehisa; and Tsunoi, Kazuo, 4,139,572, Cl. 260-674.0SA.
Torigoe, Yoshikazu; Ohshima, Noboru; Watanabe, Masaaki; and Okuya, Eitaro, to Japan Synthetic Rubber Co., Ltd. Process for preparing conjugated diene polymers. 4,139,690, Cl. 526-174.000.
Torii, Yoshinori: *See—*
Ozawa, Hiroshi; Torii, Yoshinori; Okita, Yasuo; Kobayashi, Nobuki; and Ishikawa, Koji, 4,139,672, Cl. 428-323.000.
Tornegard, Olle, to Aktiebolaget Platmanufaktur. Method and apparatus for manufacture of spirals without axle. 4,139,141, Cl. 228-173.00R.
Toru, Takeshi: *See—*
Kurozumi, Seizi; Toru, Takeshi; Tanaka, Toshio; Miura, Shuzi; Kobayashi, Makiko; and Ishimoto, Sachio, 4,139,717, Cl. 562-460.000.
Toth Aluminum Corporation: *See—*
Wyndham, Ronald; and Terry, John C., 4,139,602, Cl. 423-496.000.
Towfigh, Keivan. Space divider or the like with improved collapsible joint construction. 4,139,101, Cl. 211-86.000.
Townend, George F. Modular building construction. 4,138,833, Cl. 52-745.000.
Townsend, Robert H. Modular read/write head carriage with drive for floppy disk units. 4,139,877, Cl. 360-106.000.
Toyo Contact Lens Co., Ltd.: *See—*
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; Kanome, Shinji; and Nakajima, Tatsutoshi, 4,139,513, Cl. 260-29.6TA.
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; and Yoshikawa, Toshiharu, 4,139,548, Cl. 260-448.20B.
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Takemoto, Yasunori; Matsuoka, Tsutomu; and Nakasumi, Tadataka, 4,138,974, Cl. 123-97.00B.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Kawakami, Noboru; Goto, Takeji; Hirano, Itsuo; and Itakura, Yoichi, 4,139,181, Cl. 266-148.000.
Toyoizumi, Takeo: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; Obayashi, Takashi; Toyoizumi, Takeo; and Iwata, Osami, 4,139,494, Cl. 252-455.00R.
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Sekiguchi, Tadashi, 4,139,651, Cl. 426-616.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kanbe, Yasuhide; Yamada, Shigemichi; Nakagawa, Tadashi; and Noguchi, Mitsuyuki, 4,139,085, Cl. 192-107.00R.
Konishi, Hiromu, 4,138,905, Cl. 74-577.00R.
Mikoshiba, Shigeta; and Oishi, Tomomichi, 4,139,246, Cl. 308-26.000.
Morikawa, Toshio; and Okabayashi, Keiichi, 4,138,978, Cl. 123-119.00F.
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Feld, Gerald M., 4,138,939, Cl. 99-418.000.
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Gudea, Dumitru D.; Bryant, Thomas L.; and Chan, Wan-On, 4,139,892, Cl. 364-567.000.
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Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,139,642, Cl. 426-96.000.
Trost, John R.: *See—*
Scheuneman, James H.; and Trost, John R., 4,139,148, Cl. 235-312.000.

Troxler, Eduard: *See—*
Reinehr, Dieter; Hugelin, Bernard; and Troxler, Eduard, 4,139,560, Cl. 260-570.8OR.

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Tse, Samuel Y., to Procor Limited. Method for cooling molten sulphur. 4,139,347, Cl. 23-293.00S.

Tsen, John B.; and Reel, David A., to General Electric Company. Push button switch with secondary push button. 4,139,756, Cl. 200-330.000.

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Hoshino, Kazuo; and Tsunada, Naomasa, 4,139,083, Cl. 188-79.5GC.

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Matsumoto, Seiichi; Tsunekawa, Tokuichi; Uchiyama, Takashi; Ayata, Naoki; Matsufuji, Yoji; and Ohkubo, Yukitoshi, 4,139,278, Cl. 350-332.000.

Tsunoi, Kazuo: *See—*
Miwa, Kishio; Inoue, Takehisa; and Tsunoi, Kazuo, 4,139,572, Cl. 260-674.0SA.

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Imokawa, Genji; Tsutsumi, Hisao; Kurosaki, Tomihiro; Hayashi, Makoto; and Kakuse, Junko, 4,139,485, Cl. 252-135.000.

Tucker, Gerald L.: *See—*
Cook, Toby M.; Tucker, Gerald L.; and Brown, Marion L., 4,139,601, Cl. 423-396.000.

Tuckey, Charles H.; and Asher, David M., to Walbro Corporation. Self-lift carburetor. 4,139,580, Cl. 261-35.000.

Tuis, Luigi: *See—*
Kuper, Klaus D.; Albers, Rolf; Hillebrand, Hans-Peter; Hofmeister, Wolfgang; Ewe, Kurt; and Tuis, Luigi, 4,139,328, Cl. 415-1.000.

Tulpule, Bhalchandra R.; and Gajski, Daniel D., to Burroughs Corporation. Shift network having a mask generator and a rotator. 4,139,899, Cl. 364-900.000.

Tuma, Wade B., to Atari, Inc. Chroma generation system. 4,139,863, Cl. 358-82.000.

Tur, Wladimir, to Joos, Bernhard. Method for increasing solid surface tension. 4,139,660, Cl. 427-353.000.

Turley, William M. Pipe thread protector. 4,139,023, Cl. 138-96.00T.

Turner, Jesse H.; and Raymer, Jack D., to Essex Group, Inc. Four wave valve for reversible cycle refrigeration system. 4,139,355, Cl. 62-324.000.

Tuson, Samuel, to Entreprise d'Equipments Mecaniques et Hydrauliques E.M.H. Equipment for removing and refitting resilient packing in a cardan joint. 4,139,322, Cl. 405-169.000.

U C B, Societe Anonyme: *See—*
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,139,628, Cl. 424-271.000.

Uchida, Kazuo, to Diesel Kiki Co., Ltd. Fuel discharge nozzle. 4,139,158, Cl. 239-533.120.

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Itai, Kosaku; and Ueda, Yoshihiro, 4,139,752, Cl. 200-148.00R.

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Samoto, Masao; Ueno, Kazumi; and Tanaka, Kazuhiro, 4,139,040, Cl. 152-362.00R.

Ueno, Toshiyuki; Itoh, Isamu; and Morita, Yasuyuki, to Japanese National Railways; Kyokuto Boeki Kaisha Ltd.; and Ishikawajima-Harima Jukogyo Kabushi Kaisha. Process for excavating and constructing tunnel and excavating device. 4,139,320, Cl. 405-138.000.

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Micic, Ljubomir; Schat, Hermannus; Freyberger, Laurin C.; and Ullrich, Manfred F., 4,139,860, Cl. 358-22.000.

Ulmer, Harry E.: *See—*
Sundie, Richard D.; Michael, William R.; and Ulmer, Harry E., 4,139,507, Cl. 260-29.40R.

Ulmer, Richard W.; and Beutler, Robert R., to Motorola, Inc. CMOS polarity reversal circuit. 4,139,880, Cl. 361-246.000.

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Tatara, Shokichi; Umeda, Kenkichi; and Takahashi, Hiroshi, 4,139,875, Cl. 360-94.000.

UNEP3 Energy Systems, Inc.: *See—*
Tackett, Louis E., 4,139,071, Cl. 180-2.00R.

Unger, Manfred: *See—*
Janocha, Siegfried; Unger, Manfred; and Hoheisel, Klaus, 4,139,518, Cl. 260-40.00R.

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Bassett, David R., 4,139,514, Cl. 260-29.60H.
Solomon, Jack; and Kinneman, Thomas F., 4,139,375, Cl. 75-224.000.

Union Oil Company of California: *See—*
Mickelson, Grant A., 4,139,493, Cl. 252-455.00R.
Ward, John W., 4,139,433, Cl. 208-111.000.

Unisearch Limited: *See—*
Frost, Richard B.; Juhasz, Joseph L.; and Wing, Barry W., 4,138,817, Cl. 33-1.0SD.

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Drummond, Russell F., 4,138,860, Cl. 62-375.000.

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Kanber, Hilda; Rudnick, Isadore; and Wang, Taylor G., 4,139,806, Cl. 318-116.000.

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Berg, Norman J.; Smith, Bob L., deceased; and Adams, Allen B., legal representative, 4,139,277, Cl. 350-358.000.
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Brosseau, Timothy L.; and Liberatore, Arthur, 4,138,923, Cl. 89-33.00D.
Holmes, Allen B.; and Gehman, Stacy E., 4,138,893, Cl. 73-516.0LM.
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Meiss, James D.; and Cannon, Collins P., 4,139,724, Cl. 174-19.000.

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Haskell, Richard E. Interactive color display for multispectral imagery using correlation clustering. 4,139,862, Cl. 358-81.000.
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Gardner, Keith L.; and Adaniya, Henry N., 4,139,897, Cl. 364-827.000.
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Oharek, Frank J., 4,139,258, Cl. 350-6.800.

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Cohen, Jules B.; and Principe, Peter P., 4,138,880, Cl. 73-23.000.
Combs, L. Paul; Okuda, Allan S.; and Russell, Larry H., 4,138,986, Cl. 126-116.00R.

United States: *See—*
Chrambach, Andreas; and Nguyen, Nga Y., 4,139,440, Cl. 204-180.00G.

U.S. Philips Corporation: *See—*
Carasso, Marino G.; and Schampers, Paulus P. M., 4,139,795, Cl. 313-384.000.
Gorny, Rolf D., 4,139,252, Cl. 339-22.00B.
Jacobs, Jacobus H.; Van Esdonk, Johannes; and Franssen, Johannes P. T., 4,139,250, Cl. 316-19.000.
Reitsma, Jogchum, 4,139,894, Cl. 364-788.000.
Steinmaier, Walter; and Solo de Zaldivar, Jose, 4,139,402, Cl. 148-188.000.

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Kepler, C. Edward; and Guile, Roy N., 4,138,777, Cl. 29-157.00C.
Levesque, Adelard, Jr., 4,139,887, Cl. 364-105.000.

University of Washington, The Board of Regents of the: *See—*
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Antos, George J., 4,139,495, Cl. 252-464.000.
Antos, George J., 4,139,570, Cl. 260-666.00A.
Carson, Don B., 4,139,573, Cl. 260-683.490.
Hutchings, Le Roi E., 4,139,453, Cl. 208-213.000.

Upjohn Company, The: *See—*
Chidsey, Charles A., III, 4,139,619, Cl. 424-45.000.
Nelson, Norman A., 4,139,564, Cl. 260-586.00R.
Smith, Herman W., 4,139,712, Cl. 560-53.000.

Urich, Robert H.; and Freeman, Maurice A., to General Electric Company. Eddy current probe for inspecting interiors of gas turbines, said probe having pivotal adjustments and a borescope. 4,139,822, Cl. 324-219.000.

Usami, Toshio: *See—*
Inoue, Naofumi; Furukawa, Itsuro; and Usami, Toshio, 4,139,159, Cl. 239-547.000.

Utamura, Yukihiko: *See—*
Takagi, Toshinori; Morimoto, Kiyoshi; and Utamura, Yukihiko, 4,139,857, Cl. 357-15.000.

Valentine, Donald H., Jr.: *See—*
Leimgruber, Willy; and Valentine, Donald H., Jr., 4,139,720, Cl. 568-596.000.

Vallee, Louis L. Ventilator. 4,138,935, Cl. 98-42.00A.

Valli, Bruno: *See—*
Bocca, Giuseppe; Mostura, Tiziano; and Valli, Bruno, 4,138,912, Cl. 83-69.000.

Valyocsik, Ernest W.: *See—*
Rollmann, Louis D.; and Valyocsik, Ernest W., 4,139,600, Cl. 423-329.000.

Vamco Machine and Tool, Inc.: *See—*
Gentile, Patrick J., 4,138,913, Cl. 83-236.000.

Van Esdonk, Johannes: *See—*
Jacobs, Jacobus H.; Van Esdonk, Johannes; and Franssen, Johannes P. T., 4,139,250, Cl. 316-19.000.

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Rauner, Frederick J.; Cunningham, Michael P.; and Van Hanehem, Richard C., 4,139,390, Cl. 96-91.00N.

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Bailey, John; Cassie, Leslie H.; Sherrington, Paul R.; and van Roo, Paul, 4,139,486, Cl. 252-135.000.

Varadi, Thomas, to Israel Aircraft Industries Ltd. Quarter-turn locking device. 4,139,228, Cl. 294-83.00R.

Varta Batterie Aktiengesellschaft: *See—*
Sauer, Hans; Lippold, Hans-Martin; and Spahrbier, Dieter, 4,139,683, Cl. 429-219.000.

Vaseen, Vesper A. Producing nitric oxide and nitric acid. 4,139,595, Cl. 423-393.000.

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VDO Adolf Schindling AG: *See—*
Rau, Karl, 4,139,750, Cl. 200-84.00R.

Veber, Daniel F., to Merck & Co., Inc. Somatostatin analogs. 4,139,526, Cl. 260-112.50S.

Veijonen, Lassi: *See—*
Tapio, Olli; Veijonen, Lassi; and Riihinen, Kalevi, 4,139,410, Cl. 162-206.000.

Verdol S.A.: *See—*
Sage, Paul, 4,139,028, Cl. 139-331.000.

Vereinigte Edelstahlwerke Aktiengesellschaft: *See—*
Knotik, Karl; Leichter, Peter; and Jakusch, Heinz, 4,139,488, Cl. 252-301.10W.

Verlinden, Willy G.: *See—*
Cassiers, Paul M.; and Verlinden, Willy G., 4,139,653, Cl. 427-16.000.

Verson Allsteel Press Company: *See—*
Otsuka, Tsuruo; and Zeilenga, Jacob J., 4,138,904, Cl. 74-570.000.

Viaud, Jean-Luc: *See- -*
Levy, Jacques; and Viaud, Jean-Luc, 4,139,315, Cl. 403-19.000.

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Haramoto, Yutaka; Fujii, Yasuhiko; and Yamazaki, Masami, 4,139,728, Cl. 179-1.00G.
Kono, Makoto, 4,139,169, Cl. 242-201.000.

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Holt, Arthur W., 4,139,869, Cl. 360-35.000.

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Laesser, Claude; Viennet, Rene; and Gharadjedaghi, Fereydoun, 4,139,272, Cl. 350-337.000.
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Light, Kenneth K.; Shuster, Edward J.; Vinals, Joaquin F.; and Vock, Manfred H., 4,139,650, Cl. 426-538.000.
Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., 4,139,484, Cl. 252-89.00R.

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Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, 4,139,351, Cl. 55-97.000.

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Polard, Ronald J.; and Voorhies, John D., 4,139,492, Cl. 252-433.000.

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Garner, Herman H., 4,139,353, Cl. 55-253.000.

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Zouhar, Otakar, 4,139,361, Cl. 65-154.000.

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Carmichael, James T., 4,139,059, Cl. 166-208.000.

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Simons, Charles W.; O'Neill, Gerald J.; and Gribens, Joel A., 4,139,607, Cl. 424-45.000.
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Kamp, Heinz; and Raasch, Hans, 4,139,108, Cl. 214-41.00R.

Wacker, Adolf; Wacker, Dorthe; Pohler, Klaus; and Mittenzwei, Hellmut, to Mittenzweig, Helmut. Organic peptide containing substance recovered from blood having insulin-like activity. 4,139,611, Cl. 424-101.000.

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Kirschner, Jurgen; Klapp, Helmut; Rompeltien, Rainer; and Zajicek, Otmar, 4,139,585, Cl. 261-64.00R.

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Wade, Leslie E.: *See—*
Unruh, Jerry D.; and Wade, Leslie E., 4,139,565, Cl. 260-604.0HF.

Waelder, Ernest. Device for controlling the swinging of the boom of a sailboat. 4,138,962, Cl. 114-102.000.

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Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,139,674, Cl. 428-339.000.

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Westhoff, James R.; Waight, Harry H.; and Glancy, John J., 4,139,087, Cl. 198-309.000.

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Bower, Lewis R.; and Wake, Malcolm, 4,139,325, Cl. 405-291.000.
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Tuckey, Charles H.; and Asher, David M., 4,139,580, Cl. 261-35.000.

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Walker, Jay F. Cutaneous communication device. 4,139,742, Cl. 179-107.0BC.

Walker, Richard L., to M.F.E., Inc. Variable temperature recording stylus. 4,139,854, Cl. 346-76.00R.

Walkiewicz, Zigmunt J., Jr., to Heleron Corporation. Retainer clip for insulation or the like. 4,138,808, Cl. 52-459.000.

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Redman, John D.; and Wall, Michael R., 4,139,304, Cl. 356-358.000.

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Hebel, Walter, 4,138,818, Cl. 33-76.00R.

Walter, Lothar: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,139,242, Cl. 308-6.00C.

Wang, Harry H. L.: *See—*
Sheldrake, Stephen J.; and Wang, Harry H. L., 4,139,342, Cl. 8-4.000.

Wang, Samuel S.; and Smith, Eugene L., Jr., to American Cyanamid Company. Combinations of alkylamidoalkyl monoesters of sulfosuccinic acid and fatty acids as collectors for non-sulfide ores. 4,139,481, Cl. 252-61.000.

Wang, Taylor G.: *See—*
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Ward, Donald H.: *See—*
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Pilch, John S., 4,138,928, Cl. 91-27.000.

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Rasheed, Khalid; and Warkentin, James D., 4,139,362, Cl. 71-90.000.

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Washburn, Alfred F. Flashlight burglar alarm apparatus. 4,139,845, Cl. 340-546.000.

Washington, Joseph. Rotating toy. 4,138,798, Cl. 46-59.000.
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Watanabe, Masakatsu, to Hochiki Corporation. Alarm system. 4,139,843, Cl. 340-505.000.
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Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,139,545, Cl. 260-396.00R.
Watanabe, Naomitsu, to Hitachi, Ltd. Process for producing color television picture tube. 4,139,657, Cl. 427-68.000.
Watanabe, Nobuatsu; and Kita, Yasushi, to Watanabe, Nobuatsu; and Applied Science Research Institute. Poly-dicarbon monofluoride. 4,139,474, Cl. 252-1.000.
Water Save, Inc.: *See*—
Marmon, John C., Jr., 4,139,022, Cl. 138-44.000.
Watts, Lewis W., Jr., to Texaco Development Corporation. Aminated starch derivatives. 4,139,698, Cl. 536-50.000.
Weaver, Mark, to Phillips-Van Heusen Corporation. Shirt package. 4,139,095, Cl. 206-278.000.
Webb, Robert L.: *See*—
Labaw, Clifford S.; Webb, Robert L.; and Wellman, George R., 4,139,708, Cl. 548-342.000.
Weber, Alfred, to Swiss Aluminium Ltd. Process and device for mounting a fastening element to a composite panel. 4,138,779, Cl. 29-432.100.
Weber, Rudolf: *See*—
Schwadtke, Karl; Weber, Rudolf; and Kunzel, Werner, 4,139,475, Cl. 252-8.600.
Weems, Sterling J.; and McCurdy, Harold W., Jr., to Westinghouse Electric Corp. Hydrogen-oxygen recombiner. 4,139,603, Cl. 423-580.000.
Weet, James H.: *See*—
Steward, Frederick A.; and Weet, James H., 4,139,429, Cl. 204-105.00R.
Wegner, Carl R., to Telesonics, Inc. Stereophonic television sound transmission system. 4,139,866, Cl. 358-198.000.
Weiler, Ernest: *See*—
Kilbourn, Edward E.; Weiler, Ernest; and Weir, William D., 4,139,614, Cl. 424-211.000.
Weir, William D.: *See*—
Kilbourn, Edward E.; Weiler, Ernest; and Weir, William D., 4,139,614, Cl. 424-211.000.
Weisner, Hassel L. Method of growing plants in the roots of a live osmunda fern. 4,138,802, Cl. 47-58.000.
Weiss, Ulrich; and Rice, Kenner C., to United States of America, Health, Education and Welfare. Steroidal intermediates from the condensation product of dimethyl-3-ketoglutarate and glyoxal. 4,139,713, Cl. 560-116.000.
Weitzman, Stewart, to Pacemaker Corporation. Disposable dental tray for topical application of fluoride gel and other dental medications. 4,138,814, Cl. 32-14.00B.
Welge, Frederick T.: *See*—
Redmore, Derek; and Welge, Frederick T., 4,139,718, Cl. 260-567.60P.
Welle, Glen R., to Mister Twister, Inc. Sliding sinker. 4,138,795, Cl. 43-44.890.
Wellman, George R.: *See*—
Labaw, Clifford S.; Webb, Robert L.; and Wellman, George R., 4,139,708, Cl. 548-342.000.
Wells, Milton C. Hunter's tree stand. 4,139,080, Cl. 182-115.000.
Wenning, Michael L.: *See*—
Burdette, Stephen D.; and Wenning, Michael L., 4,138,903, Cl. 74-473.00R.
Wenrick, Brian A., to Protective Treatments, Inc. Mechanical securement of extrusions. 4,139,664, Cl. 428-31.000.
Werbenec, Jean-Pierre: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; Eymard, Pierre; Werbenec, Jean-Pierre; and Broll, Madeleine, 4,139,634, Cl. 424-274.000.
Werner, Frank D. Rock channel heat storage. 4,139,321, Cl. 405-154.000.
Werner, Klaus-Dieter: *See*—
Simon, Ulrich; Werner, Klaus-Dieter; Hoffmann, Dieter; and Pontani, Bernd, 4,139,413, Cl. 176-38.000.
Werner, Raymond E., to Sterling Drug Inc. Coloring agents for edible materials. 4,139,645, Cl. 426-250.000.
Wescom, Inc.: *See*—
Hashemi, Mike A.; and Pucci, Gregory P., 4,139,731, Cl. 179-1.0CN.
Wessinger, Bruno E. Projector leveling and focusing aid and method of using same. 4,139,287, Cl. 353-120.000.
West, Louis R., to RCA Corporation. Ground station data storage system. 4,139,900, Cl. 364-900.000.
Western Electric Co., Inc.: *See*—
Williams, Norman, 4,139,772, Cl. 250-423.00R.
Westhoff, James R.; Waight, Harry H.; and Glancy, John J., to Marathon Steel Company. Shiftable conveyor. 4,139,087, Cl. 198-309.000.
Westinghouse Canada Limited: *See*—
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Westinghouse Electric Corp.: *See*—
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,139,753, Cl. 200-148.00A.
Dailey, George F.; and Koroly, James S., 4,138,873, Cl. 72-316.000.
Fey, Maurice G.; Harvey, Francis J., II; and McDonald, Jack, 4,139,438, Cl. 204-164.000.
Isenberg, Arnold O., 4,138,881, Cl. 73-27.00R.
Kolesar, Mark; and Rettger, Harry C., 4,138,874, Cl. 72-306.000.
Lackey, Robert S., 4,139,052, Cl. 165-59.000.
Maxwell, Richard F., Jr., 4,139,848, Cl. 343-6.0ND.
Raymond, Theodore E., 4,139,778, Cl. 250-507.000.
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Shuey, Kenneth C., 4,139,878, Cl. 361-93.000.
Weems, Sterling J.; and McCurdy, Harold W., Jr., 4,139,603, Cl. 423-580.000.
Wilks, Robert S., 4,138,821, Cl. 33-174.00Q.
Wolfe, Jerome K.; Hanks, Jack G.; and Rexroad, James O., 4,139,748, Cl. 200-50.0AA.
White, Arlton H., to Texas Instruments Incorporated. Seismic exploration system for ice covered areas. 4,139,074, Cl. 181-120.000.
White, James F.; Shaw, Wilfrid G.; and Applequist, Michael D., to Standard Oil Company, The. Process for the preparation of unsaturated acids from unsaturated aldehydes. 4,139,719, Cl. 562-535.000.
White, Philip E.; and Rust, Robert C., to Control Data Corporation. Fault tolerant system for bubble memories. 4,139,886, Cl. 365-1.000.
Whittingham, M. Stanley: *See*—
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Wiechert, Rudolf: *See*—
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Wietrzyk, Paul J. Block centers. 4,139,189, Cl. 269-272.000.
Wigo Gottlob Widmann & Soehne GmbH & Co., KG: *See*—
Obrowski, Frank, 4,139,761, Cl. 219-308.000.
Wiktorowski, Thomas A.: *See*—
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Wilber, Dennis A., to Cummins Engine Company, Inc. Exhaust braking valve. 4,138,849, Cl. 60-602.000.
Wilks, Robert S., to Westinghouse Electric Corp. Pellet length and end squareness inspection apparatus. 4,138,821, Cl. 33-174.00Q.
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Williams, Anthony M., to EMI Limited. Radiography. 4,139,775, Cl. 250-445.00T.
Williams, Bill A.: *See*—
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Williams, James A.; and Jones, Arthur L., to Pelton & Crane Company. Console unit particularly for use by a dental assistant. 4,138,815, Cl. 32-22.000.
Williams, James T., to Rival Manufacturing Company. Coffee brewing machine. 4,138,936, Cl. 99-282.000.
Williams, Meurig W.; and AuClair, Christopher J., to Xerox Corporation. Electrostatographic toner composition containing surfactant. 4,139,483, Cl. 252-62.10P.
Williams, Norman, to Western Electric Co., Inc. Plasma discharge ion source. 4,139,772, Cl. 250-423.00R.
Willis, William J.: *See*—
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Wilson, Ora E. Fuel injection means for internal combustion engines. 4,138,972, Cl. 123-71.00R.
Windall, Owen D. Practice device for hitting a ball. 4,139,197, Cl. 273-185.00C.
Wing, Barry W.: *See*—
Frost, Richard B.; Juhasz, Joseph L.; and Wing, Barry W., 4,138,817, Cl. 33-1.0SD.
Winkler, Jiri: *See*—
Cibulka, Josef; Hlousek, Jaroslav; Jelinek, Richard; Krtek, Jan; and Winkler, Jiri, 4,139,788, Cl. 307-350.000.
Winters, Paul N. Electrical energy transmission network. 4,139,823, Cl. 328-155.000.
Winton, Mary J. Clothes hanger retention bar. 4,139,102, Cl. 211-124.000.
Winzer, Gerhard: *See*—
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Witco Chemical Corporation: *See*—
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Witkowicz, Tadeusz, to Northern Telecom Limited. Photodetector with improved signal-to-noise ratio. 4,139,767, Cl. 250-214.00A.
Witte, Hans-Hermann: *See*—
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Woesthoff, Ekkehard: *See*—
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Wohl, Ronald A.: *See*—
Diamond, Julius; and Wohl, Ronald A., 4,139,537, Cl. 546-309.000.
Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Triazolone herbicides. 4,139,364, Cl. 71-92.000.
Wolfe, Jerome K.; Hanks, Jack G.; and Rexroad, James O., to Westing-

house Electric Corp. Secondary contacts for drawout switchgear. 4,139,748, Cl. 200-50.0AA.
Wolfe, Maynard F. Flashgun. 4,139,293, Cl. 354-141.000.
Wolfe, Raymond: *See*—
Blank, Stuart L.; LeCraw, Roy C.; and Wolfe, Raymond, 4,139,905, Cl. 365-33.000.
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Woltmann, Siegfried: *See*—
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Chandra, Ashok K.; and Wong, Chak-K., 4,139,904, Cl. 365-3.000.
Wood, Chester W.; and Guertin, Robert W., to Dover Corporation. Automatic shut-off nozzle having controlled venturi. 4,139,031, Cl. 141-206.000.
Wood, Robert L., to Advanced Sports Corporation. Aquatic mat. 4,138,753, Cl. 9-13.000.
Woodstream Corporation: *See*—
Sieger, Samuel M., 4,139,096, Cl. 206-315.00R.
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Woolever, John T.: *See*—
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Worcester, Samuel A., Jr.: *See*—
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Worley, Eugene R. Multifunction frequency counter. 4,139,819, Cl. 324-79.00D.
Wundsch, Johannes G. Mold, for screw-threaded articles. 4,139,176, Cl. 249-59.000.
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Ostertag, Werner; Ebenhoech, Franz L.; Wunsch, Gerd; Voelkl, Erfried; and Mader, Theodor, 4,139,351, Cl. 55-97.000.
Wurm, Jaroslav, to Institute of Gas Technology, a nonprofit corporation. Solid adsorption air conditioning apparatus and method. 4,138,861, Cl. 62-480.000.
Wusthof, Peter; and Schneider, Johann, to G. L. Rexroth GmbH. Rotary fluid displacing apparatus operable as pump or motor. 4,139,335, Cl. 418-61.00B.
Wyndham, Ronald; and Terry, John C., to Toth Aluminum Corporation. Preferential chlorination of alumina in kaolinitic ores. 4,139,602, Cl. 423-496.000.
Wysocka-Skrzela, Barbara: *See*—
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Yabuuchi, Eizo; and Fukuda, Katsutake, to Dowa Mining Co., Ltd. Process for oxidation treatment of FE2+ in waste water. 4,139,456, Cl. 210-7.000.
Yabuzaki, Shunichi: *See*—
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Yaguchi, Keiichi: *See*—
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Yamada, Akira; and Suzuki, Hitoshi, to Tokyo Shibaura Electric Co., Ltd. Damping structure for elastic surface wave device. 4,139,791, Cl. 310-313.000.
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, to Canon Kabushiki Kaisha; and Tokyo Shibaura Electric Co., Ltd. Exposure computation circuit. 4,139,289, Cl. 354-23.00D.
Yamada, Shigemichi: *See*—
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Yamamoto, Ryuichi; Hirai, Yutaka; and Nagata, Teruyuki, to Mitsui Toatsu Chemicals, Inc. Process for purifying crude p-aminophenol. 4,139,562, Cl. 260-575.000.
Yamano, Shoji, to Yamato Scale Company, Ltd. Conveyor having horizontally sustained carriages. 4,139,092, Cl. 198-800.000.
Yamashita, Akio; and Hayami, Masaaki, to Matsushita Electric Industrial Co., Ltd. Apparatus for changing color. 4,139,274, Cl. 350-357.000.
Yamashita, Tadakazu: *See*—
Hayashi, Shigeyuki; Isobe, Masao; and Yamashita, Tadakazu, 4,139,511, Cl. 260-28.5AS.
Yamato Scale Company, Ltd.: *See*—
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Yamazaki, Masami: *See*—
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Yamazaki, Takeo; and Harada, Kuniyoshi, to Aisin Seiki Kabushiki Kaisha. Thermoplastic resin handles for vehicle doors. 4,138,765, Cl. 16-110.00R.
Yan, Tsoung-Yuan, to Mobil Oil Corporation. Paving grade asphalt compositions. 4,139,397, Cl. 106-278.000.
Yankovsky, Emmanuil Z.: *See*—
Danelia, Evgeny P.; Rozenberg, Vladimir M.; Solopov, Vladimir I.; Shevakin, Jury F.; Shpichinetsky, Efim S.; Berin, Ilya S.; Yankovsky, Emmanuil Z.; and Entin, Max A., 4,139,372, Cl. 75-162.000.
Yano, Kozo; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Electrochromic display. 4,139,275, Cl. 350-357.000.
Yeaton, Oliver: *See*—
Hayek, Mason; Robbins, Gordon B.; and Yeaton, Oliver, 4,139,477, Cl. 252-8.800.
Yeda Research and Development Company, Ltd.: *See*—
Halmann, Martin M.; and Lee, Dai-Woon, 4,139,502, Cl. 423-139.000.
Nudelman, Abraham; and Patchornik, Abraham, 4,139,703, Cl. 544-28.000.
Reich, Shymon; and Friesem, Albert A., 4,139,388, Cl. 96-67.000.
Yerkes, Ronald W.; Hoffner, Joel L.; Galanis, Tom L.; and Hostetter, Richard S., Jr., to Bethlehem Steel Corporation. Bar gauge plotting and display system. 4,139,890, Cl. 364-472.000.
Yih, Stephen W. H.; Worcester, Samuel A., Jr.; and Rudy, Erwin, to Teledyne Industries, Inc. Cemented carbides containing hexagonal molybdenum. 4,139,374, Cl. 75-204.000.
Yin, Ee T.; and Tangen, Oddvar, to Pharmacia AB. In vitro method of determining the biological activity of factor Xa inhibitor in blood. 4,139,415, Cl. 195-103.50R.
Ykman, Pierre: *See*—
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Yoda, Kazuhiro, to Kabushiki Kaisha Daini Seikosha. Display device. 4,139,271, Cl. 350-337.000.
Yoon, Kue H.: *See*—
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,139,753, Cl. 200-148.00A.
Yoshida, Takeshi; Kameyama, Yukio; Masuko, Hitoshi; and Yaguchi, Keiichi, to Nippon Hoso Kyokai. Eight-head magnetic video tape recording and reproducing apparatus with rotary transformer. 4,139,871, Cl. 360-64.000.
Yoshikawa, Kazuo: *See*—
Kurahashi, Keizo; Shimizu, Michihiro; Andoh, Shizuo; and Yoshikawa, Kazuo, 4,139,803, Cl. 340-707.000.
Yoshikawa, Toshiharu: *See*—
Tanaka, Kyoichi; Takahashi, Kouzou; Kanada, Mitsuhiro; and Yoshikawa, Toshiharu, 4,139,548, Cl. 260-448.20B.
Yoshimura, Tatsushiro; Namba, Mutsusuke; Suzue, Seisuke; Tominaga, Shigetake; Mizuno, Toshio; and Hayashida, Nariyoshi, to Daikin Kogyo Co., Ltd. Coating compositions containing fluorocarbons, polyarylene sulfides and polyimides. 4,139,576, Cl. 260-857.0PA.
Yoshino, Yoshimi; and Sugishita, Nobuyuki, to Hitachi, Ltd. Glass-coated thick film resistor. 4,139,832, Cl. 338-308.000.
Yuan, Shao W. Solar energy storage and utilization. 4,138,995, Cl. 126-271.000.
Yuran, Paul J.: *See*—
Rostron, Joseph R.; Cromer, Charles F.; and Yuran, Paul J., 4,139,751, Cl. 200-148.00A.
Zack, Arthur E., to Johns-Manville Corporation. Pipe elbow fitting cover. 4,139,026, Cl. 138-178.000.
Zadikow, Victor: *See*—
Dorfman, Bertrand; and Zadikow, Victor, 4,139,735, Cl. 179-2.50R.
Zaganiacz, Frederick J., to Mobay Chemical Corporation. Transparent pigmented polycarbonate container. 4,139,517, Cl. 260-37.0PC.
Zahorsky, Carroll L. Drain construction. 4,139,012, Cl. 128-350.00R.
Zajicek, Otmar: *See*—
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Zeeh, Bernd; Jung, Johann; and Ammermann, Eberhard, to BASF Aktiengesellschaft. Furan and thiophene derivatives as preservatives and silage conditioners. 4,139,641, Cl. 426-69.000.
Zeilenga, Jacob J.: *See*—
Otsuka, Tsuruo; and Zeilenga, Jacob J., 4,138,904, Cl. 74-570.000.
Zeleny, Klaus. Jacquard machine for a weaving machine. 4,139,027, Cl. 139-59.000.
Zenchenko, Svetlana M.: *See*—
Neduv, Mikhail B.; Bazakin, Vladimir I.; Komarenko, Taisia I.; Zenchenko, Svetlana M.; Kirpichnikova, Zinaida F.; and Gakh, Igor G., 4,139,557, Cl. 260-561.00R.
Zenith Radio Corporation: *See*—
Rowe, William A., 4,139,797, Cl. 313-408.000.
Zerbes, Rudolf, to Bayer Aktiengesellschaft. Recovery of (1-S)-2-oxobornane-10-sulphonate. 4,139,555, Cl. 260-503.000.
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Zichis, Joseph; and Zichis, Lillian K., executrix. Preparation of antigen and test for heterophil antibody. 4,139,606, Cl. 424-12.000.

Zichis, Lillian K., executrix: *See*—
Zichis, Joseph; and Zichis, Lillian K., executrix, 4,139,606, Cl. 424-12.000.
Ziegler, Karl, to Robert Bosch GmbH. Reversible intermittent film drive for motion-picture projector. 4,139,285, Cl. 352-194.000.
Zielinski, Stefan, to Aluminum Plumbing Fixture Corp. Hydraulic operator for water closet. 4,138,748, Cl. 4-312.000.
Zijlstra, Jan G. H., to Ahi Operations Limited. Drainage fittings and/or wash-house fittings. 4,138,747, Cl. 4-286.000.
Ziman, Stephen D., to Chevron Research Company. Thiatriazolidin-4-one-2-oxide herbicides. 4,139,363, Cl. 71-91.000.
Zimmerer, John L.; and Brooks, John H., to McCulloch Corporation. Vibration isolation system for chain saw structures. 4,138,812, Cl. 30-381.000.
Zouhar, Otakar, to Vyskumny ustav mechanizacie a automatizacie. Apparatus for glazing bases of electric bulbs. 4,139,361, Cl. 65-154.000.
Zurrer, August: *See*—
Scheidegger, Rudolf; and Zurrer, August, 4,139,431, Cl. 204-109.000.
Zwick, Eugene B. Low emission combustion apparatus. 4,138,842, Cl. 60-39.230.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF FEBRUARY, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ahmed, Adel A. A., to RCA Corporation. Current mirror amplifier. Re. 29,910, Cl. 330-51.000.

Ball Corporation: *See—*
Munson, Robert E., Re. 29,911, Cl. 343-700.0MS.

Betz Laboratories, Inc.: *See—*
Fowler, William J.; Heberle, Richard A.; Tonkyn, Richard G.; and Vorchheimer, Norman, Re. 29,908, Cl. 210-51.000.

Deknatel Inc.: *See—*
Kurtz, Leonard D., Re. 29,909, Cl. 252-89.00R.

Ferranti Limited: *See—*
Jackson, Sydney; and Shepherd, Alan A., Re. 29,906, Cl. 228-6.00A.

Fischer, Christopher L.; and Otte, Richard F., to Raychem Corporation. Cryogenic connection method and means. Re. 29,904, Cl. 29-628.000.

Fowler, William J.; Heberle, Richard A.; Tonkyn, Richard G.; and Vorchheimer, Norman, to Betz Laboratories, Inc. Process for clarification of oil-containing waste. Re. 29,908, Cl. 210-51.000.

Heberle, Richard A.: *See—*
Fowler, William J.; Heberle, Richard A.; Tonkyn, Richard G.; and Vorchheimer, Norman, Re. 29,908, Cl. 210-51.000.

Jackson, Sydney; and Shepherd, Alan A., to Ferranti Limited. Apparatus for mounting semiconductor devices. Re. 29,906, Cl. 228-6.00A.

Kurtz, Leonard D., to Deknatel Inc. Method of cleansing contaminated wounds. Re. 29,909, Cl. 252-89.00R.

Munson, Robert E., to Ball Corporation. Microstrip antenna structures and arrays. Re. 29,911, Cl. 343-700.0MS.

Otte, Richard F.: *See—*
Fischer, Christopher L.; and Otte, Richard F., Re. 29,904, Cl. 29-628.000.

Raychem Corporation: *See—*
Fischer, Christopher L.; and Otte, Richard F., Re. 29,904, Cl. 29-628.000.

RCA Corporation: *See—*
Ahmed, Adel A. A., Re. 29,910, Cl. 330-51.000.

Scheurer, Philippe. Feed apparatus for automatic lathe. Re. 29,905, Cl. 214-1.200.

Shepherd, Alan A.: *See—*
Jackson, Sydney; and Shepherd, Alan A., Re. 29,906, Cl. 228-6.00A.

Simpson, Robert C. Ilex verticillata bush named Winter Red. Re. 29,912, Cl. Plt.-65.000.

Tonkyn, Richard G.: *See—*
Fowler, William J.; Heberle, Richard A.; Tonkyn, Richard G.; and Vorchheimer, Norman, Re. 29,908, Cl. 210-51.000.

Vorchheimer, Norman: *See—*
Fowler, William J.; Heberle, Richard A.; Tonkyn, Richard G.; and Vorchheimer, Norman, Re. 29,908, Cl. 210-51.000.

LIST OF PLANT PATENTEES

Bell, Elberta F.: *See—*
Bell, James C., 4,378, Cl. 30.000.

Bell, James C., to Bell, James C.; and Bell, Elberta F. Almond tree. 4,378, 2-13-79, Cl. 30.000.

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CLASS 182

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88 4,139,078
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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